

MOTOR AGE

VOLUME XXII

CHICAGO, AUGUST 15, 1912

NUMBER 7

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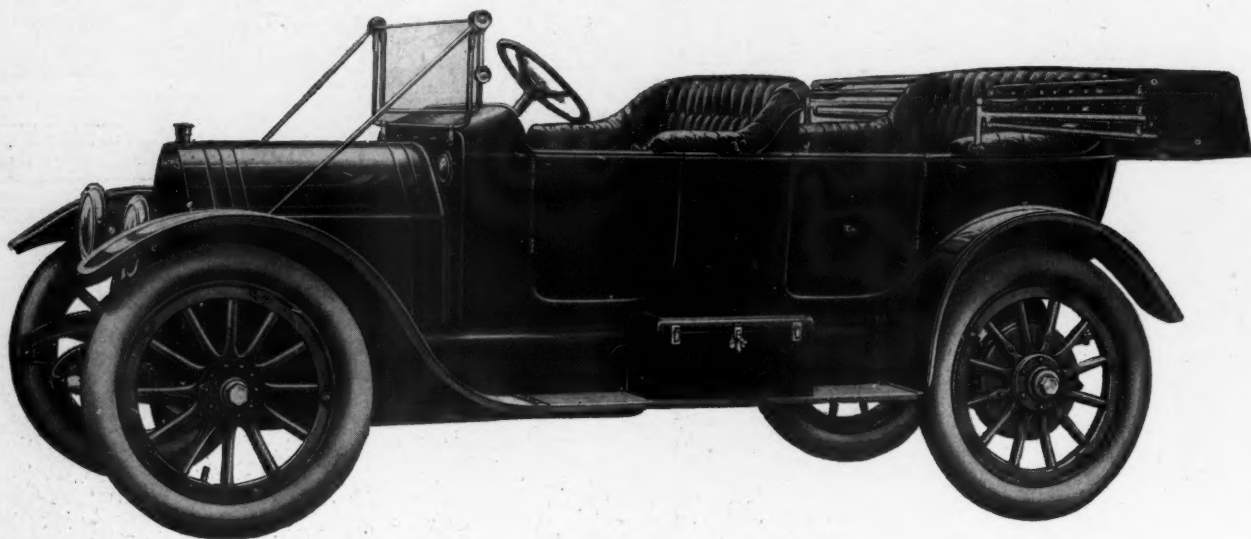
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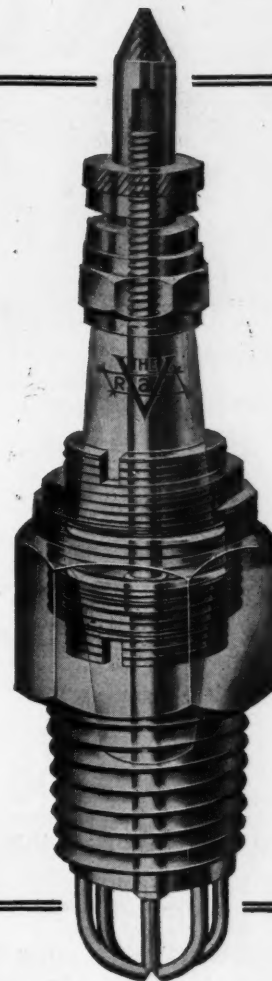
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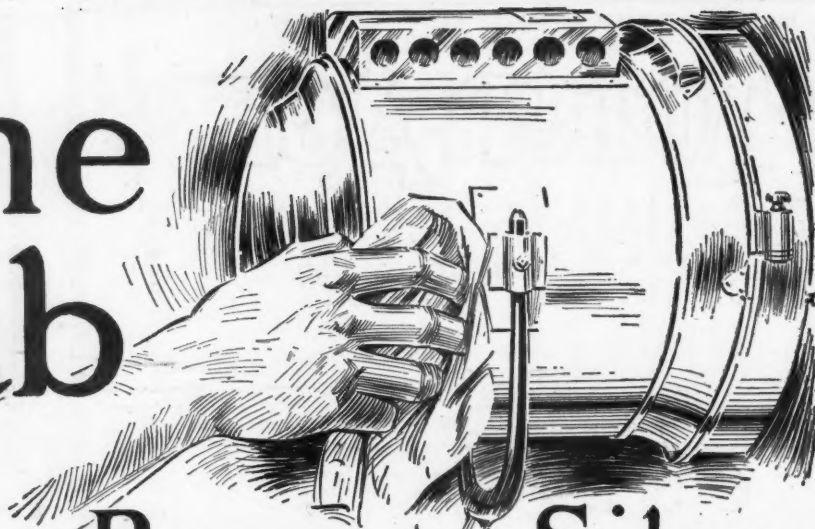
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\$1.00 bottle will silver plate your whole car

Right now stick a dollar bill and your card in an envelope and mail to us for a bottle of SILVER QUICK. Silver plate every piece of bothersome brass on your car. Get away from that cheap, brassy look. Make your car as up-to-date as any 1913 model.

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MOTOR AGE



STARTING OF A 50-MILE EVENT IN GALVESTON BEACH MEET

Fast Cars Race Over Galveston Beach

Annual Meet of Texans Attracts Large Crowds—Sport Is Exciting, Louis Disbrow Being Individual Star—Case, Mason, National and Studebaker Among Winners—Simplex Does Mile in :31.11 Over the Sand

GALVESTON, Texas, Aug. 10—Signal success marked the fourth annual meet which came to a close here today. It was conducted, like its predecessors, under the auspices of the Galveston Racing Association and as one of the attractions of the Galveston cotton carnival.

The fame of the Galveston beach course has been well spread abroad during the last 2 or 3 years and as a result of this better knowledge of the perfect condition of this stretch of sand speedway there were attracted here for the meet just closed many veteran devotees of the sport.

Big Causeway an Attraction

One thing that contributed very much to the size of the crowds here this year was the completion of the giant concrete causeway across Galveston bay, connecting the city and island with the mainland, and making it possible for cars to enter the city without being ferried across the 2-mile stretch of water. As a direct result of this important improvement motor car parties from Dallas, Fort Worth, Houston, Waco, San Antonio, Austin and other towns in the state made the trip to Galveston during the week. Hundreds of these privately-owned motor cars crossed the causeway and the pleasure-seekers were able to enjoy to the full limit the 3 days' festivities. The mainland end

By W. D. Hornaday

of the causeway connects with a fine system of highway that leads to the more interior portions of the state.

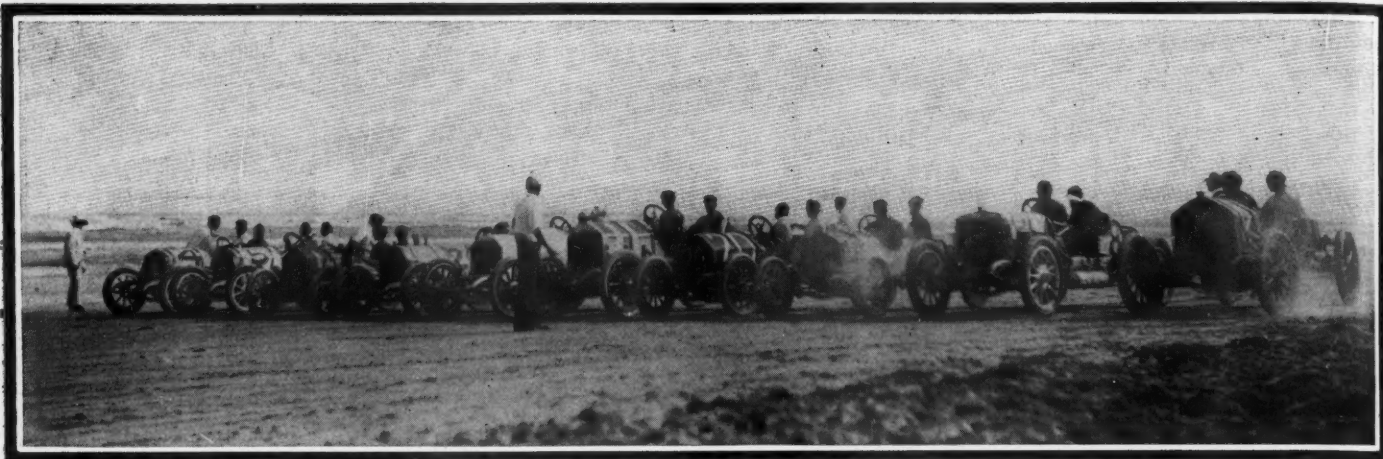
The Galveston beach course is on the gulf side of the island. It is a straight and ideal course of $2\frac{1}{2}$ miles, and according to the statements of experienced drivers it has no superior in the country. The turns are all that could be desired. The fact that the hard sand beach is subjected to tidal inundation keeps it packed and smooth. The course is so laid out that the cars pass the grandstand twice in making each lap. The grandstand itself is a new structure with a seating capacity of 10,000 people. It was comfortably filled at each day's events, and besides this crowd thousands of spectators viewed the racing from the open space along the course. Each afternoon several hundred motor cars were packed closely along the whole $2\frac{1}{2}$ miles of track and from the different vantage points the occupants were able to view the sport. It would be difficult to imagine more ideal conditions for motor racing. The water of the Gulf of Mexico laps at the side of the course, while as far as the eye can reach over the vast expanse of water may be seen the whitecaps as they

race in angry mood hither and thither. Flowing inland constantly is a salt-laden breeze that serves as additional tonic for the seeker for pleasure.

As an evidence of the national popularity of the Galveston beach course among devotees of the sport it is pointed out that there were more entrants to this season's 3 days' events than of that of any other race meet this year. The entrants to the different events and classes numbered seventy-three. While a number of these failed to start they were all here and were deterred from participating in the sport by unlooked for happenings and circumstances.

Officials Work Hard

The program for the 3 days was made up of ten events. Through the efforts of Captain J. W. Munn, chairman of the local racing committee, everything at the track was in trim shape. Fred J. Wagner was official starter, F. E. Edwards, chairman of the technical committee of the A. A. A., besides performing the work of inspecting the mechanism of the different cars and putting his official stamp of approval upon the entries and classes, also had charge of the electrical timing machine, and was one of the hardest worked men on the course. The referee was Mayor Lewis Fisher, of Galveston.



TYPICAL FIELD LINED UP FOR START ON GALVESTON BEACH

The judges were G. W. Baker, of Dallas, G. A. Halff, of San Antonio and J. S. Bonner, of Houston. A. E. McPherson, of Indianapolis, was assistant starter. The chief scorer was C. H. Verschoyle, of Dallas. He was assisted by Mr. Korbel.

The mechanical organization, as it might be called, was perfect. The pits for the drivers and mechanics were well equipped and conveniently located. Everything was systematized so that no time was lost in making the necessary repairs and readjustments.

While from a speed standpoint the meet was not up to the expectations of some of the spectators as well as the entrants and drivers themselves, the exhibition was on the whole very creditable. The showing made by the different cars came up to the usual performances on beach tracks and established the Galveston course as being equal to others of its kind. The high tide had somewhat marred the smoothness of the course on the first day, but the condition of the sand improved each succeeding day of the races. The turns were sufficiently wide as to enable the cars to make them without material loss of time.

Minor Mishap in Race

What might have been a serious mishap occurred in the second event, yesterday—a 25-mile race—when two National cars had a minor collision on the first turn at the east stake on the first lap. Ralph Plummer was driving car No. 11 which was struck, the injury to the latter being the springing of the fore axle. National No. 12 also suffered a sprung axle. The two cars continued in the running, however, Plummer taking first money.

Another mishap feature of the second day was when Case Bullet No. 5, driven by Joe Nikrent, threw a tire in the first lap of the second 25-mile race. It was not called in and the run was finished on the rim, the car taking second money.

Mercer No. 20, driver, A. Ferguson, was put out of commission temporarily on the second day by fire damage while on the first lap of the second 25-mile race.

Representatives of nearly all the larger

motor car manufacturers were here and witnessed the different events. Several of these concerns established headquarters here during the meet and it is stated that many sales were made. The fact that the meet was attended by people from all over the state and that many of the visitors came here for the purpose of satisfying themselves as far as possible as to the merits of the respective cars offered an exceptionally good opportunity for sales. Among the visitors were scores of prosperous farmers. Motor car dealers in Texas are finding that the best field for sales is among the farmers and the horny-handed son of toil was a welcome visitor to the different headquarters during the week.

Disbrow Throws a Tire

No untoward accident occurred during the whole 3 days' meet. The nearest approach to it was when L. Disbrow's Simplex Zip threw a tire in the 200-mile race on the last day and the whirling broken piece inflicted slight injuries to his face. The meet was, on the whole, one of the most delightful in many respects that has been given this season, so far. The big crowd was at all times good humored and showed a keen appreciation of the work

of the drivers. From a financial standpoint it is understood the promoters of the meet came out on the right side of the ledger. In practically all of the events the Case team clearly had the best of it and it carried away a big share of the \$7,000 of prizes.

First Day's Racing

Galveston, Texas, August 8—The program of the first day was made up of five events. Interest was centered in the last one on the list—a 75-mile race, open to class E nonstock cars of 600 cubic inches displacement and under. Disbrow, driving his Simplex Zip, easily took first money in this event. He started at a clip that quickly placed him in the lead and during the entire 75 miles he retained first position, but was closely pressed at different times by Clark, driving a Mercedes. The exhibition made by the Mercedes was but little short of that of the Simplex, the former coming in a close second and never once losing its position of next to the winning car. Disbrow also took second money in the second race, driving the Case White Streak. These two successes made him clearly the hero of the day in the eyes of the spectators.

The first event of the afternoon was a



STARTER WAGNER TELLING DRIVERS TO GET READY



CARS GOING TO THE TAPE FOR START OF A LONG RACE

15-mile race open to class C non-stock cars of division 3-C. The winner was the Case Bullet, driven by Nikrent. His time was 15:04.52. Disbrow, driving his Case White Streak, was a close second; time 15:05.

A Mason Special, Endicott, driver, won the second race of 15 miles. This was a class C nonstock. Two Flanders Specials came in second and third. The third event was devoted to class C nonstock, division 4-C, distance 20 miles. It was won by a National, with Plummer driver, in 20:05. A Stutz, driven by Stolz, was second.

Cleanup for Studebaker

In each of the first four races there were only three cars starting. The entries in the fourth event were all Studebaker 20's, and they finished with Evans, driver, winner of the 10-mile run; time 11:07.9. This race was open to Class C cars nonstock.

In the 75-mile race eleven cars were entered and only five of the number completed the fifteen laps. As stated above, Disbrow, driving his Simplex Zip, won this event. His time was 1:09:16.72.

The time of the Mercedes was 1:09:42.66. A Mason Special was third. Case

White Streak and Mercer finished fourth and fifth, respectively. Summaries:

FIRST DAY

Event No. 1, class C nonstock, division 3-C, 15 miles. Prizes: First, \$100; second, \$25; third, \$10.

Car	Bore	Stroke	Driver	Time
Case Bullet....	4 1/2	5	Nikrent	15:04.62
Case White				
Streak	4 1/2	5	Disbrow	15:05.00
Mercer	4 1/2	5	Ferguson	15:09.70

Event No. 2, class C nonstock, division 2-C, 15 miles. Prizes: First, \$100; second, \$25; third, \$10.

Mason Special..	3 1/2	5	Endicott	15:27.75
Flanders Special.	4	4 1/2	Tower	15:57.55
Flanders Special.	4	4 1/2	Evans	16:09.89

Event No. 3, class C nonstock, division 4-C, 20 miles. Prizes: First, \$150; second, \$50; third, \$25.

National	5	5 1/2	Plummer	20:05.00
Stutz	4 1/4	6 1/2	Stolz	22:01.36
National	5	5 1/2	Melaun	Flagged off

Event No. 4, class C nonstock, division 1-C, 10 miles. Prizes: First, \$75; second, \$20; third, \$10.

Studebaker 20...	3 3/4	3 3/4	Evans	11:07.09
Studebaker 20...	3 3/4	3 3/4	Tower	11:11.91
Studebaker 20...	3 3/4	3 3/4	Finch	Distanced

Event No. 5, class E nonstock, 75 miles. Prizes: \$400, \$200, \$100 and \$50 each to cars finishing first in classes 1-C, 2-C, 3-C, 4-C and 5-C.

Simplex	5	5 3/4	Disbrow	1:09:16.72
Mercedes	5	7 1/4	Clark	1:09:42.66
Mason Special..	3 1/2	5	Endicott	1:12:16.92
Case White				
Streak	4 1/2	5	Ulbrecht	1:58:49.70
Mercer	4 1/2	5	Fergus'n	2:00:20.00
National	5	5 1/2	Plummer	.....
Lozier	5 1/2	6	Horan	.....
Flanders Special.	4	4 1/2	Evans	.....
Flanders Special.	4	4 1/2	Tower	.....
Case Bullet....	4 1/2	5	Nikrent	.....
National	5	5 1/2	Melaun	.....

So good was the sport today, that it was predicted that there will be huge crowds out for the next two sessions of the meet.

Second Day's Racing

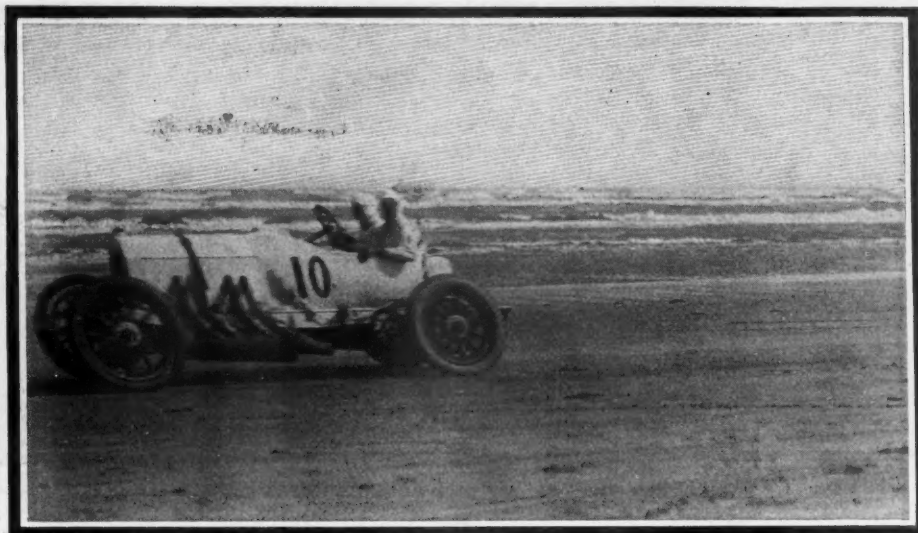
Galveston, Texas, Aug. 9—There was a good program of events for the second day of the meet. The crowd was almost as large as on the opening day, and interest in the different races was not lacking. No accident occurred to mar the different events until the last on the list—that of the flying start for beach record—was reached. It was discovered when the first car went over the wire the 290-horsepower Jay-Eye-See, which was entered and driven by L. Disbrow, that the grounding of the timing wire prevented any time being taken. There were five other entrants to this event and the contest was the subject of much interest on the part of the spectators. Particular disappointment was felt over the cancelled opportunity for the speedy little Simplex Zip which Disbrow also entered and was the driver to show what it could do.

The Zip won its way to popular favor on the first day and it received the plaudits of the grandstand in all of its other notable performances. It easily won first place in the class D free-for-all, covering the distance of 50 miles well ahead of its nearest competitor on every lap. This event was the fourth on the second day's program. The time of Simplex Zip was 46:18.89. The other feature of this race was the unusually large field of entries. Seventeen cars lined up for the start. They filled the entire beach course from side to side, and the get-away was exciting enough for the devotees of the sport.

With the speed which Simplex Zip showed from the beginning it was clear that it was destined to carry off first money, amounting to \$350. The second prize of \$100 went to the Mercedes. This car showed better speed in the second day's events than in those of the opening day. Third place was won by the Case Bullet, Joe Nikrent, driver. The Case Special, Endicott, driver, came in fourth in this race.



PUSHING OUT THE BIG JAY-EYE-SEE



CLARK'S MERCEDES, WHICH WAS A PROMINENT FACTOR

It is worthy of note that in this race Douglas Christie, the driver of Studebaker 20, continued through it notwithstanding the fact he had not been out of his seat during the two previous 25 mile races. It was a trial of endurance that he came through with in good shape.

There were only three starters in the first event of the second day's program. It was for class E non-stock, special cars of 230 cubic inches displacement and under. The first prize of \$250 went to the Mason Special in 23:25.76. The Mason was in the lead at the end of every lap of this 15-mile race. The second prize of \$100 was won by the Flanders Special, driven by Evans. The fourth car, which was also a Flanders Special, with Tower for driver, dropped out during the fourth lap.

The second event of the day was class E, special for cars of 450 cubic inches and under piston displacement; distance 25 miles. The National, with P. Plummer driver, took first money, its time being 23:54.69. The Case White Streak, with L. Disbrow driver, came in second, and Case Bullet, Joe Nikrent driver, third.

The third race on the program also was for a distance of 25 miles and open to class E non-stock special cars of 300 cubic inches and under piston displacement. The Case Bullet, with Nikrent entrant and driver, won this race in 23:29.9.

In the 75-mile race Fred Wagner disqualified Driver Stolz for cutting across the course with his Stutz. Summaries:

SECOND DAY

Event No. 6, class E non-stock, special, 25 miles. Prizes: \$250, \$100 and \$50.

Car	Bore Stroke	Driver	Time
Mason Special.. 3 1/2	5	Endicott	23:25.76
Flanders Special. 4	4 1/2	Evans	24:12.51
Flanders Special. 4	4 1/2	Tower	24:35.39

Event No. 7, class E, special, 25 miles. Prizes: \$250, \$100 and \$50.

National	5	5 1/2	Plummer	23:54.69
Case White				
Streak	4 1/2	5	Disbrow	26:10.37
Case Bullet....	4 1/2	5	Nikrent	26:46.52
National	5	5 1/2	Melaun	26:49.03
Studebaker 20..	3 1/2	3 1/2	Christie	.....
Case Special....	4 1/2	5 1/2	Perry	.....
Mercer	4 1/2	5	Ferguson*	.....
Stutz	4 1/2	6 1/2	Stolz*	.....

*Failed to finish.

Event No. 8, class E non-stock, special, 25 miles. Prizes, \$250, \$100, \$50.

Case Bullet....	4 1/2	5	Nikrent	23:29.09
Case White				
Streak	4 1/2	5	Disbrow	24:43.82
Studebaker 20..	3 1/2	3 1/2	Christie	33:08.35
Mason Special..	3 1/2	5	Endicott	.....

Event No. 9, class D, free-for-all, 50 miles. Prizes: \$350, \$100 and \$50, and prizes of \$25 each to cars finishing first in classes 1-C, 2-C, 3-C, 4-C and 5-C.

Simplex Zip....	5	5 1/2	Disbrow	46:18.89
Mercedes	5	7 1/2	Clark	46:43.67
Case Bullet....	4 1/2	5	Nikrent	51:46.63
Case Special....	4 1/2	5 1/2	B. Endicott	.....
National	5	5 1/2	Melaun	.....
Studebaker 20..	3 1/2	3 1/2	Christie	.....
Case White				
Streak	4 1/2	5	Ulbrecht	.....
Simplex	6 1-10	5 1/2	Pringle*	.....
National	5	5 1/2	Plummer*	.....
Studebaker	3 1/2	3 1/2	Finch*	.....
Flanders Special. 4	4 1/2	4 1/2	Tower*	.....
Flanders Special. 4	4 1/2	4 1/2	Evans*	.....
Mason Special.. 3 1/2	5	5	H. Endicott*	.....
Fiat	5 1/2	7 1/2	De Palma*	.....
Lozier	5 1/2	6	Horan*	.....
Buick	5	5 1/2	Robetie*	.....
Stutz	4 1/2	6 1/2	Stolz*	.....

*Failed to finish

Third Day's Races

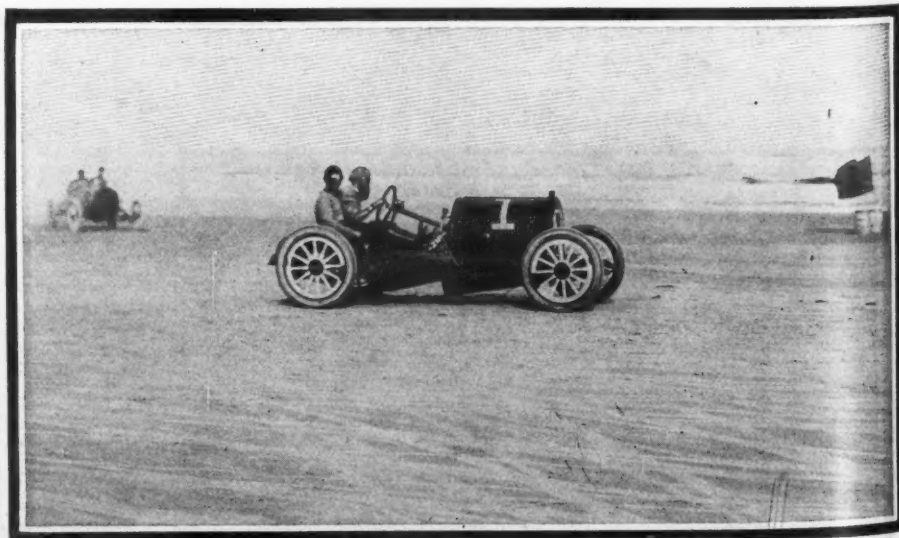
Galveston, Texas, Aug. 10—Two scheduled events which were on the program today served to bring out the record-breaking crowd in point of numbers of the meet. Not only was the grandstand filled to its capacity, but the parking space along the entire course was jammed with cars and spectators. The big attendance

was very gratifying to Captain J. W. Munn and his associates, who have strived so hard to make the races a success. While the 200-mile race was the chief feature, there was no little interest manifested in the proposed effort to break the record time on the local beach, which was 37.8 seconds, made last season. This event came last on the day's program and it was well after darkness had begun to settle down that L. Disbrow and helpers shoved his big 290-horsepower Jay-Eye-See car onto the course and made the trial with a flying start. This car covered the mile in :31.11. It won the prize of \$200 and had it covered the mile in :30 or less it would have captured a \$500 purse. It was the only car to try for the record.

Disbrow Wins Century Double

The 200-mile race was not without its thrilling incidents. The star performer was the little Simplex Zip, Disbrow driver. This car quickly caught the lead and it maintained it with varying regularity and in the face of a mishap that came near being very serious. This accident was the throwing of a tire just as the wire was about to be crossed on the lap completing the first 50 miles. The tire flapped around with lightning rapidity and a strip of it struck and badly cut Disbrow in the face. It required less than 3 minutes to replace the tire, but in this short interval the little wonder fell back to fifth place. It recovered its lost lead in a few more laps. It paid a second visit to the pit—this time for oil and gasoline—at the end of the lap marking the end of the one-hundredth mile.

All during the race the closest competitor of the Simplex was the Mason Special, H. Endicott driver. This car made 180 miles before visiting the pit for gasoline or other purpose. The time of the Simplex for the 200 miles was 3:05:17.19; that of the Mason Special was 3:08:23.30. The third car to finish in this race was the Mercedes, W. H. Bertrand entrant, and Clark, driver. Its time was 3:15:47.12.



DISBROW IN SIMPLEX ROUNDING THE FLAG

Of the fifteen cars that entered for this race only four finished. The fourth to finish was the Flanders Special, driven by Evans. The first prize in this race was \$1250; second, \$500; third, \$200, and fourth, \$100. Summaries:

Event No. 10, class D, free-for-all, 200 miles. Prizes: First, \$1,250; second, \$500; third, \$200; fourth, \$100, and prizes of \$100 each to cars finishing in classes 1-C, 2-C, 3-C, 4-C and 5-C.

Car	Bore	Stroke	Driver	Time
Simplex Zip....	5	5 3/4	Disbrow	186:17.19
Mason Special...	3 1/2	5	H. En'c't	188:23.31
Mercedes	5	7 1/4	Clark	195:47.12
Flanders Special.	4	4 1/2	Evans	216:47.44
National	5	5 1/2	Plummer	.....
Case Special....	4 1/2	5 1/2	B. Endicott*	.....
Studebaker 20...	3 3/4	3 3/4	Christie*	.....
Flanders Special.	4	4 1/2	Tower*	.....
Stutz	4 1/4	6 1/2	Stolz*	.....
Case White		5	Ulbrecht*	.....
Streak	4 3/4	7 3/4	J. De Palma*	.....
Flat	5 1/2	5 1/2	Perry*	.....
National	5	5	Nikrent*	.....
Case Bullet....	4 3/4	3 3/4	Finch*	.....
Studebaker 20...	3 3/4			

†Flagged off 37 laps. *Failed to finish
Event No. 11, class E, non-stock, flying start, for beach record of 1 mile. Prize of \$200 to be awarded car making best time, providing present time of :37.8 is lowered. Special prize of \$500 to car making mile in :30 or better.
Car Bore Stroke Driver Time
Jay-Eye-See 9 1/4 8 3/4 Disbrow ...:31.11

BIG ROAD SESSION ENDS

San Francisco, Cal., Aug. 10—As a fitting climax to their 3 days' convention in San Francisco, which has been marked by much good work and many addresses of educational value, the delegates of the Pacific Highway Association motored to San Bruno, just outside of this city, and there on the peninsula road witnessed the formal turning of the first shovelful of earth in California's \$18,000,000 highway project. The first spade of earth which marks the actual beginning of work on the big plan, was turned by Burton A. Towne, chairman of the state highway commission, on the old El Camino Real.

Immediately after the ceremony the Pacific highway delegates repaired to three great tables, the guests of San Mateo county at a big barbecue. During the afternoon the final session of the convention was held under the spreading oak trees. Judge Ronald, of the highway association, criticized severely the condition of the El Camino Real.



FERGUSON'S MERCER SETTING PACE AT GALVESTON

Among the other speakers of the afternoon were President Walker, of the California State Automobile Association, and Thomas Taylor, minister of public works in British Columbia. The final business of the convention was the unanimous adoption of the report of the nominating committee, which left in office practically the same men who are now serving. The new official list is as follows: President, J. T. Roland, of Seattle; honorary secretary, Frank H. Fretwell, of Seattle; vice-president for Alaska, Falcon Joslyn; for British Columbia, A. E. Todd and F. R. McD. Russell; for Canadian Yukon, Alfred D. Thompson; for California, A. G. Briggs of San Francisco and F. W. Jackson of San Diego; for Oregon, Frank B. Bailey, of Portland; for Washington, Samuel Hill, of Maryhill.

WIRE WHEEL DEAL COMPLETED

Philadelphia, Pa., Aug. 13—George W. Houk Co., of this city, which has the American rights for manufacturing the Rudge-Whitworth detachable wire wheels, an English invention, has completed arrangements with the Standard Roller Bearing Co., of this city, for the manu-

facture of these wheels for the American trade. The Standard company at its plant in this city has sufficient manufacturing space available and already is engaged in equipping it with the necessary machinery for the manufacture of these wheels. It is expected that the manufacturing will begin in 30 days.

MARMON MAKING TRUCKS

Indianapolis, Ind., Aug. 13—Indianapolis is to be the home of another commercial car. The newcomer is the Marmon light delivery truck and will be manufactured by the Nordyke & Marmon Co. The Marmon truck is a light delivery car with a carrying capacity of 1,200-1,500 pounds. The motor used is the same as in the Marmon 32, the four-cylinder pleasure car, with the exception that the truck will use a motor with a 4-inch bore instead of the 4 1/2-inch of the touring car. An unusual mechanical feature is the automatic governor, which limits the speed of the truck to a maximum of 20 miles an hour. A heavy type of rear system will be used, preserving, however, the features of accessibility and simplicity that are found in the pleasure models. Another new idea in connection with light delivery vehicles is brought out in equipping the Marmon truck with dual rear wheels, the double-tired wheels being usually found only on the heavier type of trucks. The new truck uses pneumatic tires, 32 by 4, and has a wheelbase of 120 inches. The company announced the new model today.

ANOTHER CHAIN SUIT

New York, Aug. 12—Suit has been entered and a temporary restraining order issued by Judge Lacombe of the United States district court against Joseph A. Del Solar, of New York, on behalf of the Weed Chain Tire Grip Co., for alleged infringement of the Parsons non-skid patents. The defendant represents the sale of Perry and Peerless chains, made by the Perry Chain Co., of Lansing, Mich. The answer is returnable August 27.



ULBRECHT IN CASE WHITE STREAK AT GALVESTON

Board of Trade Bows to Dyer Patent

Manufacturing Licenses Secured by Trade Organization for Certain Number of Its Present and Future Members— Deal Likely to Bring N. A. A. M. Into Merger

NEW YORK, Aug. 12—As the direct outgrowth of the recent decision sustaining the validity of the Dyer patents, the Automobile Board of Trade has arranged for licenses under these patents for its members. With this comes the announcement that this action of the board of trade will result in an early coalition of the National Association of Automobile Manufacturers with the board of trade. The presumption is that the N. A. A. M. is induced to this step in order to take advantage of the Dyer license rights acquired by the former body.

Manufacturing licenses under the Dyer patents, covering selective gearsets and direct drive epicyclic gearsets, also known as planetary, the right to use the H-change-plate and other devices covered by the patents, have been secured for a certain number of the present and future members of the Automobile Board of Trade, under an agreement dated August 15, 1912. The contract securing these rights is voluminous, but its exact terms have not been made public.

Under the contract the board of trade pays a lump sum to the Enterprize Automobile Co., of Hoboken, N. J., the holding corporation that owns the Dyer patents, and secures the right from the Enterprize company to apply for licenses for its membership without cost up to a certain specified number. It is also provided that in case the individually licensed company leaves the Automobile Board of Trade or abandons manufacturing, the license shall expire. In the contingency of the dissolution of the board of trade, the agreement as such will be nullified. Just what will be done with applications for license in excess of the specified number was not revealed by either party to the transaction.

Deal Made in Patents

As a further consideration for the contract it is provided that the Patents Holding Association, a subsidiary of the old Association of Licensed Automobile Manufacturers and which was inherited by the Automobile Board of Trade, shall convey all rights held by it in the five Dyer patents covering the H-change-plate, removable rigid motor frame, planetary gear and other gear patents, to the Enterprize Automobile Co. and that the licenses issued by that company shall include right to manufacture under all the patents involved and any further motor car patents that may be taken out by Leonard H. Dyer. The rights of the Patents Holding Association consisted of exclusive rights to issue licenses under the five minor patents referred to. These rights have been

held by the association for over 6 years. The Enterprize company is left free to grant licenses to other manufacturers on a royalty basis. The rights secured to the members of the Automobile Board of Trade are very broad.

The most important patent included in the license rights attained under the agreement is number 885,986, a division of the application filed by Leonard H. Dyer, February 3, 1900. This patent is remarkably broad in its view and is outlined in fifty-seven separate claims. It is dated April 28, 1908, and consequently will run until April 28, 1925, a trifle less than 13 years. The Enterprize Automobile Co. has issued two manufacturing licenses so far. One was to the makers of the Correja and the other to the manufacturers of the G. J. G. Three importers licenses have been granted and over eighty individual licenses.

Story of the Suit

Suit was commenced against four companies affiliated with the Automobile Board of Trade last year and the minor suits were pressed, according to Mr. Dyer, to demonstrate what basis of royalty should be charged pending the determination of the main suits. This campaign will probably be continued for a time despite the withdrawal of the main suits in question as soon as licenses have been issued to the defendant companies.

According to William A. Redding, patent counsel, associated with Frederick P. Fish in representing the Automobile Board of Trade, the Dyer transmission patent is broader and more intimately related to the motor car trade than the Selden patent was deemed to be. The devices described by Mr. Dyer in patent 885,986 cover the selective type of gearset in fifty-seven phases and Mr. Redding declares that the present type of selective gearset in general use throughout the industry comes within the terms of the patent. The full text of the claims made is reproduced on another page.

The effect of the agreement will be to check prosecutions for infringement against the licensed members of the Automobile Board of Trade and the sellers and users of their product. The four suits now pending against the Maxwell-Briscoe Motor Co., Locomobile Co. of America, Winton Motor Carriage Co. and the Saurer manufacturers will be withdrawn when licenses have been granted to them.

These suits were entered last summer on behalf of the Enterprize Automobile Co. as assignee of the patent rights of Leonard H. Dyer. They called upon the court to grant an injunction against fur-

ther infringement, and asked for an accounting for profits derived from past infringement and damages for the alleged infringements.

In discussing the litigation, Mr. Redding said:

"The patent is imposing in its breadth and has been a threatening element in the industry up to this time. Our search disclosed a mass of data, but the industry can draw its own conclusions from the fact that my clients were strongly advised by me, as early as last winter, to take out licenses and avoid the possible danger and expense that must have followed a complete and favorable adjudication of the patents in question.

"Since that period, numerous conferences have been held between the interested parties, and an option was given by the Enterprize Automobile Co. to take out licenses. This option would have expired August 15. I am not at liberty to detail the terms of the instrument nor the particulars of the agreement we have just made. There were some changes in the original proposition submitted on behalf of the Enterprize company and some changes in the counter-proposition made by my clients, but I can say that the agreement is satisfactory to both sides. It raises the shadow cast by the likelihood of suits against makers and users of cars produced by the Automobile Board of Trade members and gives them valuable rights under the patents and at the same time the acknowledgment of the validity of the patents by the act of taking licenses under them must prove agreeable to the patentee and his assigns."

Gist of the Contract

The contract for licenses under the lump sum agreement provides for the present membership of the Automobile Board of Trade, if applications are made, and all companies that join that organization in the future up to a certain number. As a merger of the Automobile Board of Trade and the National Association of Automobile Manufacturers is pending, the members of the national association who are not already members of the board of trade, will be entitled to licenses on that basis.

The procedure by which the licenses will be granted contemplates an application by the board of trade to the Enterprize Automobile Co. for such license. The number is not limited, but it is unquestionably true that future members of the board of trade will have to pay more for the license privilege than the present membership, including the N. A. A. M.

The present membership of the Automobile Board of Trade is as follows:

Autocar Co., Buick Motor Co., Cadillac Motor Car Co., Cartercar Co., Chalmers Motor Co., Jas. Cunningham Sons and Co., Elmore Mfg. Co., H. H. Franklin Mfg. Co., Garford Co., Haynes Automobile Co., Hudson

Five Patents Cover Dyer's Invention

Idea Takes in Selective and Direct-Drive Epicyclic or Planetary Gearsets—Claim First Filed June 8, 1898 and Granted in 1900—Inventor Talks of His Device

Motor Car Co., International Motor Co., Jackson Automobile Co., Knox Automobile Co., Locomobile Co. of America, Lozier Motor Co., Marquette Motor Co., Matheson Automobile Co., Mercer Automobile Co., Metzger Motor Car Co., Mitchell-Lewis Motor Co., Moline Automobile Co., Moon Motor Car Co., National Motor Vehicle Co., Nordyke and Marmon Co., Oakland Motor Car Co., Olds Motor Works, Packard Motor Car Co., Peerless Motor Car Co., Pierce-Arrow Motor Car Co., Pope Mfg. Co., Premier Motor Mfg. Co., Pullman Motor Car Co., Rapid Motor Vehicle Co., Reliance Motor Truck Co., Reo Motor Car Co., Selden Motor Vehicle Co., F. B. Stearns Co., Stevens-Duryea Co., S. G. V. Co., E. R. Thomas Motor Co., United States Motor Co., Warren Motor Car Co., White Co., Willys-Overland Co., Winton Motor Carriage Co.

The list totals forty-six. In the event of application for license of the constituent companies of the United States Motor Co. and the International Motor Co., this number would be increased to fifty-one. The full roster of the N. A. A. M. includes the following cars:

Auburn, Abbott, Alco, American, Detroit Electric, Apperson, Austin, Autocar, Babcock Electric, Baker, Glide, Brush, Buick, Cadillac, Cartcar, Chalmers, Cutting, Cole, Columbia, Firestone-Columbus, Corbin, Stoddard-Dayton, De Tamble, Duryea, Elmore, E-M-F, Federal Truck, Flat, Ford, Franklin, Garford, Grabowsky, Gramm, Great Western, Hayne, Hewitt, Hudson, Humphreys, Imperial, Interstate, Jackson, Rambler, Kelly Truck, Kissel, Knox, Krit, Locomobile, Lozier, Stutz, International, Motor Car Manufacturing Co., Marquette, Matheson, Maxwell, Everitt, Mitchell, Moline, Moon, National, Marmon, Oakland, Ohio Electric, Oldsmobile, Packard, Peerless, Pierce-Arrow, Case, Pope, Premier, Pullman, R. C. H., Rapid, Rauch and Lang, Regal, Reliance, Reo, Royal Tourist, Selden, Simplex, Staver, Stearns, Stevens-Duryea, Studebaker, Thomas, Velle, Walter, Waverley, White, Winton, Woods, Overland, Warren. This makes a total of ninety-two members.

N. A. A. M. Membership

There are forty-four members of the N. A. A. M. who are not represented in the board of trade, but among them are six makers of electrics, a duplication of the Studebaker Corporation and E-M-F and several companies that are active.

The United States Motor Co., comprising the Brush, Maxwell, Columbia, Stoddard-Dayton and Sampson lines, is expected to take out four licenses for the last four companies named. This will bring the total number of licenses to be granted to the members of the merged organizations to about seventy-five. In the list of members are the names of several companies whose product is deemed to be outside the patents. Precisely which companies are included in this list will appear when the licenses are granted.

The outcome of the remarkably successful negotiations uncovers one of the main reasons for the pending merger between the two national organizations. The membership of the board of trade is almost entirely included in the national association, but the national association under its charter is not allowed to hold patent rights as such. Therefore, if the license rights are assumed by the Automobile Board of Trade and the two organizations are merged, the members of the national association will be able to enjoy the privileges of license rights granted through the board of trade.

THE five Dyer patents which have been assigned to the Enterprise Automobile Co. by the Automobile Board of Trade, all apply to improvements in the gearing for motor cars. They are numbered respectively 643,595, 657,650, 662,400, 662,401 and 676,223.

The first of them was applied for June 8, 1898, and was granted September 11, 1900, and covers a fixed guide plate with recesses and notches to hold the gear-shifting lever. This is patent number 657,650. Patent 643,595, granted February 13, 1900, is for two gears and an intermediate epicyclic gearing interposed between one of the gears and the driven axle. Patent 662,400, granted November 27, 1900, covers the subject of two shafts with spur gearing and means for intermeshing the gear wheels so as to transmit power from the driving to the driven shaft.

Patent 662,401 is for a multiple-speed transmission gearing and similar to the main patent save that the gears cannot be shifted as an entirety and the principle of direct drive with all gearing quiescent is not covered. Patent 676,223 covers a removable rigid bridge to carry the motor and operating parts.

Progress of Dyer Patents

In speaking of his patents and particularly referring to patents 885,986 and 921,963, Mr. Dyer said:

"There has been a widely circulated opinion that the Dyer patents were allowed to sleep in the patent office and, after the industry had grown up around them, were issued. This is not true. The exact fact in the case is that through interference proceeding with the Renault patent, application for which was pending co-incidentally with my own, the dates and claims of my patent were revealed and the industry appropriated my idea and incorporated them into the modern car. Imagine, if possible, the elimination of my idea from modern construction; then the importance of my device will be obvious.

"As to the prior art, there is none. Of course there can be found a record of a vast amount of ineffectual endeavor, but there is a difference between ineffectual endeavor and desire to attain a certain result and the actual accomplishment of such a result.

"The American situation is embodied in the Dyer patents, 1900, Renault patent 1901, Law, Leonard and Riker 1903. These records are all available to searchers and if any of them antedated my patents, Mr. Redding surely would have discovered

them. In the foreign art there is nothing effective, despite the large quantity of abortive and ineffectual material revealed by a careful search.

"I demanded interference proceeding in the Patent Office when the Renault patent was issued and the whole record of the proceedings is available. The fact that, despite the proceedings, my patent was issued as antedating that of Renault ought to be conclusive. The French Renault patent was issued in 1904."

The Main Dyer Patent

The main Dyer patent in the lime-light at present is number 885,986, issued April 28, 1908, on application filed January 22, 1906, but in reality extending back in its effect to the statutory period before February 3, 1900. The reason for this retroactive effect of the patent is that it is declared to be a division of an application for patent filed at that date by Leonard H. Dyer and which was later issued as patent 921,963 under date of May 18, 1909.

Patent 921,963 underlies the other as a sort of foundation for it. It is for a motor vehicle, covering improvements in the frame, driving gear and changing and reversing mechanisms. According to the language of the patent, the object of the invention is to improve motor car construction by direct driving connections between the motor and the differential with such reduction as is necessary, owing to the relatively different speeds of such parts. In connection with this direct drive mechanism is provided an additional low-speed gearing, and if necessary a back or reverse gearing, either of which will be introduced when required.

The invention also comprises a rectangular metal frame-work, supported by means of springs, upon wheels, with a driving motor carried thereon. Connection is made between the driving engine and the longitudinal shaft by means of the usual friction clutch and the shaft may be provided if necessary with one or more flexible or knuckle joints to permit the framework to oscillate independently of the wheels and yet allow the driving mechanism to run freely.

To provide a speed-changing gear, the longitudinal shaft is formed in two parts with a releasable connection between them combined with means for rotating the two shaft parts at different speeds. The invention is broad enough to permit of any form of mechanism being used for this purpose, but an auxiliary shaft is preferred, so mounted as to be parallel with the two parts of the main shaft, with a

system of spur-gearing, which is normally not in mesh but which can be intermeshed after the two shaft parts have been separated.

Combined with the speed reducing gear is a reversing gear, which may be of any type, but a series of gears mounted upon another auxiliary shaft with bevel gearing so arranged that the two parts of the longitudinal shaft may be caused to rotate in opposite directions is preferred. The claims under this patent number three and are as follows:

1—The combination in a vehicle of a spring-supported frame, driving and steering wheels, a motor mounted upon the front of the frame, a shaft driven by such motor and in line with the shaft of the motor, the said shaft being longitudinally arranged substantially at an equal distance between the wheels and substantially parallel with the ground, a friction clutch connecting the shaft to the motor, a second shaft in line with the first shaft, means for directly connecting the two shafts for driving the second shaft without reduction in speed, means for breaking the connection between the two shafts and for connecting them together through power transmitting mechanism, affording a reduced speed, a differential gear between the second shaft and the wheels of the vehicle, and a reversing gear for reversing the direction of travel of the vehicle.

2—The combination in a vehicle of a spring-supported frame, driving and steering wheels, a motor mounted upon the front of the frame, a shaft driven by such motor and in line with the shaft of such motor, the said shaft being longitudinally arranged between the wheels, a friction clutch connecting the shaft to the motor, a second shaft in line with the first shaft, means for directly connecting the two shafts for driving the second shaft without reduction in speed, and means for breaking the connection between the two shafts and for connecting them together through power-transmitting mechanism, affording a reduced speed.

3—The combination in a vehicle, of a spring-supported frame, driving and steering wheels, a motor mounted upon the front of the frame, a shaft driven by such motor and in line with the shaft of the motor, the said shaft being longitudinally arranged between the wheels, a friction clutch connecting the shaft with the motor, a second shaft in line with the first shaft, means for directly connecting the two shafts for driving the second shaft without reduction of speed, means for breaking the connection between the two shafts and for connecting them together through power-transmitting mechanism, affording a reduced speed, and a reversing gear for reversing the direction of travel of the vehicle.

The claims of patent No. 885,986 are as follows:

1—In a transmission for motor vehicles, the combination of a driving member, a driven member, a driving gear for the former, a plurality of intermediate gears, including a reversing gear and means, including mechanism shiftable as an entirety, for driving said driven member through any one of said intermediate gears.

2—In a transmission gear for motor cars, the combination of a driving member, a driven member, a driving gear for the former, a plurality of intermediate gears including a reversing gear and means, including mechanism shiftable as an entirety, for coupling said driving member to said driven member and for also driving said driven member through any one of the said intermediate gears.

3—Transmission mechanism for motor vehicles, the same comprising a driving member, a driven member, means to couple said driven member to said driving member to be driven by the latter and means comprising mechanism shiftable as an entirety to drive said driven member at a different speed for said driving member and to drive said driven member in reverse direction from said driving member.

4—Transmission mechanism for motor vehicles, the same comprising a driving member, a driven shaft axially aligned therewith, means to couple said member and shaft, one to the other for direct drive of the latter by the former, a plurality of gears arranged out of line with the axis of said shaft and driven by said member, and a shiftable transmission device on said shaft and adapted to engage the said plurality of gears to drive said shaft in the same, and also in a reverse direction.

5—In a transmission gear for a motor vehicle, the combination of driving member, a driven member, and means comprising mechanism shiftable as an entirety coupling said driving member to said driven member to drive the latter from the former and for varying the speed and direction of movement transmitted from said driving member to said driven member.

6—Transmission mechanism for motor vehicles, the same comprising a driving shaft, a

plurality of fixed intermediate gears, including a reversing gear, means for supporting said gears, a driven shaft and means comprising a longitudinal, shiftable transmission device to rotate the latter from the driving shaft to any one of said intermediate gears.

7—Transmission mechanism for motor cars, same comprising a driving shaft, gear supporting means driven therefrom at a reduced speed, a plurality of fixed intermediate gears, including a reversing gear, a driven shaft and means comprising a longitudinal, shiftable transmission device to rotate the latter from the driving shaft through any one of said intermediate gears.

8—Transmission mechanism for motor vehicles, comprising a driving member, a driven member, a shiftable transmission member, means co-ordinate therewith to couple said driven member to said driving member, one or more stationary intermediate gears driven by said driving member and means to bring said transmission member into separate engagement and disengagement with said one or more intermediate gears.

9—Transmission mechanism comprising a driving member and a driven member adapted to be driven one by the other at the same speed, at different speeds, or in a reverse direction and mechanism longitudinally shiftable as an entirety for obtaining such changes in speed and direction.

10—Transmission mechanism for motor vehicle comprising a driving member, a driven intermediate gear, a jack-shaft arranged at transmission device on said shaft, means for coupling said driving member and said driven shaft one to the other for the direct drive of the latter by the former, one or more stationary gears arranged at one side of the axis of said shaft and driven by said driving member and means to shift such transmission device into engagement with the said one or more gears.

11—In a motor vehicle, a motor, clutch, driving gear and driven shaft, all axially aligned, intermediate gears between said driven shaft and driving gear, mechanism shiftable as an entirety to couple said driven shaft to said driving gear and to drive said shaft from said driving gear through any one of said intermediate gears, a jack-shaft arranged at an angle with said driven shaft and driven therefrom and vehicle driving wheels connected with and driven from said jack-shaft.

12—In a motor vehicle, a motor, clutch, driving shaft and driven shaft, all axially aligned, means comprising mechanism shiftable as an entirety for varying the speed and direction of movement transmitted from said driving shaft to said driven shaft, a jack-shaft arranged at an angle with said driven shaft and driven therefrom and vehicle driving wheels connected with and driven from said jack-shaft.

13—In a transmission gear for motor vehicles the combination of a driving member, a driven member, axially aligned therewith and means comprising mechanism shiftable as an entirety to couple said driving and driven members together and to vary the speed and direction of movements transmitted from said driving member to said driven member.

14—In a speed changing gear for motor vehicles, the combination with a motor shaft, a driven shaft, means for connecting the two together to secure high speed, a low speed gearing consisting of a plurality of gear wheels caused to engage by longitudinal shifting movements and means for producing reverse rotation of the driven shaft.

15—In a motor vehicle the combination with the motor and driving wheels, of a gearing connecting the driving wheels and motors, the said gearing comprising a longitudinal shaft and a clutch connecting the shaft to the motor, and by means of which it will be driven, of means for rotating the wheels and a portion of the shaft at a different speed ratio, the said means including a jaw-clutch and longitudinally sliding gears, a single lever for sliding the gears and engaging and disengaging the jaw-clutch and a reverse gearing, and means operated by the said lever for engaging the reverse gearing.

16—In a motor vehicle the combination with a driving motor and driving wheels, of a gearing connecting the two, the said gearing comprising longitudinally aligned driving and driven shafts and a clutch connecting the driving shaft to the motor, and by means of which it will be driven, connections between the driven shaft and the driving wheels, gearing connecting the longitudinal shaft to positively drive the driven shaft at low or high speed, and comprising longitudinally sliding gears and a second clutch, and a single manually operated sliding device for sliding the gears, and for engaging the second clutch.

17—In a motor vehicle, the combination with a driving motor and driving wheels, of a gearing connecting the two, said gearing comprising longitudinally aligned driving and driven shafts and a clutch connecting the driving shaft to the motor and by means of which it will be driven, connections between the driven shaft and the driving wheels, gearing connecting the longitudinal shafts to positively drive the driven shaft at low or high speeds, and comprising longitudinally sliding gears and a second clutch, and a single actu-

ating lever for sliding the gears and for engaging and disengaging the second clutch.

18—In a motor vehicle, the combination with the motor and driving wheels, of a gearing connecting the two, the said gearing comprising longitudinally aligned driving and driven shafts and a clutch for connecting the two, for driving the driven shaft at high speed, and reduced speed gearing for positively driving the driven shaft at a reduced speed and means for engaging the said reduced speed gearing, the said reduced speed gearing being entirely disconnected when not in use, and being introduced and disengaged by a longitudinally sliding movement.

19—In a motor vehicle the combination with the motor and driving wheels of a gearing connecting the two, the said gearing comprising longitudinally aligned driving and driven shafts and a clutch for connecting the two for driving the driven shaft at high speed, and reduced speed gearing and reverse gearing for positively driving the shaft at a reduced speed, or in the reverse direction, and means for engaging the said reduced speed gearing and reverse gearing being entirely disconnected when not in use, and being introduced and disengaged by a longitudinally sliding movement.

20—In a motor vehicle the combination with the motor and driving wheels, of a gearing connecting the two, the said gearing comprising a longitudinal shaft, a clutch connecting the shaft to the motor and by means of which it is driven, connections between the shaft and the driving wheels, and a change speed device for rotating a portion of the shaft at a less speed than the motor, the said change speed device comprising an auxiliary shaft and gears on the longitudinal shaft, and means for intermeshing the gears by a sliding movement.

21—In a motor vehicle, the combination with the motor and driving wheels of a gearing connecting the two, the said gearing comprising a longitudinal shaft, a clutch connecting the shaft to the motor, and by means of which it is driven, connections between the shaft and the driving wheels and a change speed device for rotating a portion of the shaft at a less speed than the motor, the said change speed device comprising an auxiliary shaft, and gears on the longitudinal shaft and means for intermeshing the gears by a sliding movement, the said means comprising a single manually operated lever.

22—In a motor vehicle the combination with the motor and driving wheels, of a gearing connecting the two, the said gearing comprising a longitudinal shaft, a clutch connecting the shaft to the motor, and by means of which it is driven, connections between the shaft and the driving wheels and a change speed device for rotating a portion of the shaft at a less speed than the motor, the said change speed device comprising an auxiliary shaft, mounted in rigid bearings, gears rigidly mounted on the auxiliary shaft and gears on the longitudinal shaft, and means for intermeshing the gears by a sliding movement.

23—In a motor vehicle the combination with a driving shaft made in two parts, of a clutch made in two parts and connecting the shaft parts, one of the clutch parts sliding upon its supporting shaft part, a gear connected to the sliding clutch part and sliding with it, an auxiliary shaft, gears thereon and means for sliding the moving clutch part and its companion gear to disengage the two shaft parts and engage the gear with a gear on the auxiliary shaft, to cause the two shaft parts to rotate at a different speed relation.

24—In a motor vehicle the combination with a driving shaft in two parts, of a clutch made in two parts and connecting the shaft parts, one of the clutch parts sliding upon its supporting shaft part, a gear connected to the sliding clutch part and sliding with it, a gear on the other shaft part and rotating with it, an auxiliary shaft gear thereon, the said shaft being mounted on rigid bearings and means for sliding the moving clutch part and its companion gear to disengage the two shaft parts and engage the gear with a gear on the auxiliary shaft, to cause the two shaft parts to rotate in a different relation.

25—In a motor vehicle, the combination with a driving shaft made in two parts, of a clutch made in two parts and connecting the two shaft parts, one of the clutch parts sliding upon its supporting shaft part, a gear connected to the sliding clutch part and sliding with it, a gear on the other shaft part and rotating with it, and auxiliary shaft, gears thereon, the gears being rigidly mounted on the shaft and means for sliding the moving clutch part and its companion gear to disengage the two shaft parts and engage the gear with a gear on the auxiliary shaft to cause the two shaft parts to rotate in a different speed relation.

26—In a motor vehicle the combination with a driving shaft made in two parts, of a gear case, a clutch made in two parts and connecting the two shaft parts, one of the clutch parts sliding upon its supporting shaft part, a gear connected to the sliding clutch part and sliding with it, a gear on the other shaft part and rotating with it, an auxiliary shaft,

mounted in rigid bearings, carried by the gear case, gears movable in a fixed plane with respect to said shaft, on the auxiliary shaft and means for longitudinally sliding the moving clutch part and its companion gear to disengage the two shaft parts and engage the gear with a gear on the auxiliary shaft to cause the two shaft parts to rotate in a different speed relation.

27.—In a motor vehicle, the combination with a driving shaft made in two parts, of a gear case, bearing on the gear case for the shaft parts, a clutch made in two parts and connecting the two shaft parts, one of the clutch parts sliding upon its supporting shaft part, a gear connected to the sliding clutch part and sliding with it, a gear on the other shaft part and rotating with it, an auxiliary shaft, mounted in rigid bearings, carried by the gear case, gears on the auxiliary shaft, the said gears being rigidly mounted on the shaft and means for sliding the moving clutch part and its companion gear to disengage the two shaft parts and engage the gear with a gear on the auxiliary shaft to cause the two shaft parts to rotate in a different speed relation.

28.—In a motor vehicle, the combination with a shaft made in two parts of a gear case, bearings on the gear case for the shaft parts, a clutch made in two parts and connecting the two shaft parts, one of the clutch parts sliding upon its supporting shaft part, a gear connected to the sliding clutch part and sliding with it, a gear upon the other shaft part and rotating with it, and auxiliary shaft, mounted in rigid bearings carried by the gear case, gears on the auxiliary shaft, and means carried within the gear case for sliding the moving clutch part and its companion gear to disengage the two shaft parts and engage the gear with a gear on the auxiliary shaft to cause the two shaft parts to rotate in a different speed relation.

29.—In a motor vehicle the combination with a driving shaft made in two parts, of a gear case, bearings on the gear case for the shaft parts, a clutch made in two parts and connecting the two shaft parts, one of the clutch parts sliding upon its supporting shaft part, a gear connected to the sliding clutch part and sliding with it, a gear on the other shaft part and rotating with it, an auxiliary shaft mounted in rigid bearings carried by the gear case, gears on the auxiliary shaft, the said gears being rigidly mounted on the shaft, and means carried within the gear case for sliding the moving clutch part and its companion gear to disengage the two shaft parts and engage the gear with a gear on the auxiliary shaft to cause the two shaft parts to rotate in a different speed relation.

30.—A motor vehicle having driving wheels, a motor, a shaft in line with the motor shaft, a clutch connecting the two to cause the shaft to rotate at the same speed as the motor, the shaft being longitudinally arranged between the driving wheels and divided into two sections, a device for connecting and disconnecting the two sections for causing them to rotate as an entirety or to permit independent rotation, means for rotating the rear section of the shaft at a lesser speed than the motor or in a reverse direction, said means including sliding gears, longitudinally movable in a fixed plane with respect to said shaft and mechanism for so moving said gears.

31.—In a motor vehicle, the combination with a shaft formed of two parts, a connecting clutch and a gear on each shaft part, of a second shaft and gears thereon, and a single lever for shifting the gears on the first shaft and actuating the clutch.

32.—Transmission for a motor vehicle, having a shaft formed of two parts, one telescoping within the other, connecting a clutch, a gear carried by one clutch member, a second gear connected to the first gear but freely rotatable with respect thereto, a second shaft, and gears thereon and a single lever for shifting said first gears, and actuating the clutch.

33.—In a motor vehicle, the combination with a shaft formed of two parts, of a clutch connecting the two parts, a sleeve surrounding the abutting ends of the two parts, a gear formed integral with the clutch, and engaging with one part, a second gear formed integral with the sleeve and engaging with the other part, an auxiliary shaft, gears thereon disengaged at the high speed, intermediate gears interposed between the gears on the second shaft, and means for moving the sleeve, clutch and gears to disengage the two shaft parts and intermesh the gears whereby the two parts of the shaft may be caused to rotate in different speed relation.

34.—Transmission gearing for a motor vehicle, having a shaft formed of two parts, one telescoping within the other, a connecting clutch, a gear integrally formed upon one clutch member, a second gear, a sleeve thereon, connecting with, but freely rotatable with respect to the first gear, a second shaft with gears thereon and a single shifting lever for sliding first gears and disengaging the clutch.

35.—In a motor vehicle, a gearcase therefor, having a cover and supporting brackets, with a set of common securing bolts.

36.—In a motor vehicle, a combination of a shaft therefor, formed in two parts, a fixed clutch member on one part, a movable clutch member on the other, gears connected to said

movable member, a plurality of auxiliary shafts, gears thereon, and means for sliding said movable clutch member and connected gears along the shaft to disengage the clutch and intermesh the gears serially.

37.—In a motor vehicle, the combination with the shaft, formed in two parts of a clutch for connecting parts together because the shaft to rotate as an entirety, slidable gears on the shaft's parts, connecting to and working with one clutch member, auxiliary shafts with gears thereon, and means, which being moved, will first disengage the clutch and move the gears to a position to engage with the gears on one auxiliary shaft to cause the shaft's parts to partake of the different speed relations, and the continuation of the movement will cause the gears to engage with the gears on the other auxiliary shaft and cause the shaft's parts to rotate in opposite directions.

38.—In a motor vehicle, the combination with an operating motor, of connections between the motor the driving wheels, comprising a two-piece shaft connected thereto, connections to said shaft and driving wheels, a clutch connecting the two parts of the shaft, a gear carried by one part of the shaft, a second gear carried by the other part, connections between the gears and the clutch for moving altogether, an auxiliary shaft, two gears secured thereto, out of mesh with the other two gears at the high speed, a second auxiliary shaft, two gears secured thereto, normally out of mesh with the first two gears, intermediate gearing interposed between the two gears on the second auxiliary shaft, and means for disengaging the clutch and intermeshing the different gears, whereby the two parts of the shaft may be caused to rotate in different speed relations.

39.—In a motor vehicle, the combination with the driving shaft made in two parts, of the clutch connecting the two parts, a sleeve surrounding the abutting ends of the two parts, a gear formed integral with the clutch, a second gear formed integral with the sleeve and engaging with the other part, and an auxiliary shaft, gears thereon, disengaged at the high speed, and means for moving the sleeve, clutch and gears to disengage the two shaft parts and intermesh the gears, whereby the two parts of the shaft may be caused to rotate in different speed relations.

40.—In a motor vehicle, the combination with the driving shaft made in two parts, of a clutch connecting the two parts, a sleeve surrounding the abutting ends of the two parts, a gear formed integral with the clutch, a second gear formed integral with the sleeve and engaging with the other part, an auxiliary shaft, gears thereon, disengaged at the high speed, a second auxiliary shaft gears thereon disengaged at the high speed and means for moving the sleeve, gears and clutch to disengage the two shaft parts and intermesh the gears, whereby the two parts of the shaft may be caused to rotate at different speeds.

41.—In a motor vehicle, the combination with the driving shaft made in two parts, of a clutch connecting the two parts, a sleeve surrounding the abutting ends of the two parts, a gear formed integral with the clutch and engaging with one part, a second gear formed integral with the sleeve and engaging with the other part, and an auxiliary shaft, gears thereon, disengaged at the high speed, intermediate gearing interposed between the gears, means for moving the sleeve, clutch and gears to disengage the two shaft parts and intermesh the gears.

42.—In a motor vehicle, the combination with a motor and driving wheels, of connections between said motor and the driving wheels, including a two-piece shaft, a clutch connecting the two shaft pieces, gears upon the shaft pieces and auxiliary shaft with gears thereon, said gears being so arranged as to be out of mesh when the clutch is engaged, an element longitudinally shiftable as an entirety for actuating said clutch and intermeshing said gears, substantially as set forth.

43.—In a motor vehicle, the combination with the shaft formed in two parts, one telescoping within the other, of a connecting clutch, a gear integrally formed upon one clutch member, a second gear connected to the first gear but freely rotatable with respect thereto, a second shaft, and gears thereon, and a single lever for shifting said first gears and actuating the clutch, substantially as described.

44.—In a motor vehicle, the combination with the driving shaft formed in two parts, of a fixed clutch member on one part, a sliding clutch member on the other part, a gear rigidly connected to said slidable member, a gear rotatably connected to said slidable member, and auxiliary shaft, gears thereon and means for moving said slidable clutch member and connected gears along the shaft to disengage the clutch and intermesh the gears.

45.—In a motor vehicle, the combination with an operating motor, of connections between the motor and the driving wheels, comprising a two-piece shaft connected thereto, the connections between said shaft and driving wheels, a clutch connecting the two parts of the shaft, a gear carried by one part of the shaft, a second gear carried by the other part, connections between the gears and clutch for moving all together, an auxiliary shaft, two gears secured together, out of mesh with the other

two gears at high speed, a second auxiliary shaft, two gears secured thereto out of mesh with the first two gears at the high speed, and means for disengaging the clutch and intermeshing the gears, whereby the two parts of the shaft may be caused to rotate in different speed relations.

46.—In a motor vehicle, the combination of the driving wheels, the motor, the driving shaft between the motor and driving wheels, made of two longitudinally aligned sections, a clutch arranged to couple the sections so that the driving shaft may turn as an entirety and longitudinally sliding speed reducing gearing arranged to connect the shaft sections, and so co-ordinated with said clutch that the engagement of said gearing will effect the prior disengagement of said clutch and vice versa.

47.—In combination in a change-speed mechanism, a driving shaft, a driven shaft, gears mounted upon said driving shaft and driven shaft, intermediate gears on an axis in fixed relation with the axis of said driving and driven shafts, means for transmitting power from said driving shaft to said driven shaft through said intermediate gears, and means movable on the driven shaft for directly connecting the driving and driven shafts with all intermediate gears at rest.

48.—In combination in a change-speed mechanism, a driving and a driven shaft arranged in the same axial line and adapted to have independent movement, change gears carried upon the driving and driven shafts, means for varying the position of said gears, power transmitting means adopted to connect a gear on said driving shaft and on said driven shaft and a clutch mechanism for directly connecting said driving and driven shafts.

49.—In combination in a change-speed mechanism, a driving shaft, a gear borne upon said shaft, a counter-shaft, a gear borne upon the counter shaft and meshing with the gear upon the driving shaft, a driven shaft operatively arranged with relation to the driving shaft and provided with a clutch mechanism adapted to clutch it directly to said shaft, and intermediate gears borne upon the driven shaft and counter shaft, whereby the speed of the former may be varied with relation to the speed of the latter.

50.—In combination in a change-speed mechanism, a driving shaft and driven shaft, a driving gear for the former, a plurality of intermediate gears including a reversing gear and means for driving said driven shaft through any one of said intermediate gears.

51.—In combination in a change-speed mechanism, a driving shaft, a driven shaft, a plurality of transmission gears mounted to slide thereon, a plurality of intermediate gears arranged to engage and drive respectively, but singly, the said transmission gears, and means to couple said driven shaft directly to said driving shaft.

52.—In a motor vehicle, the motor, clutch, driving gear and driven shaft, all axially aligned, means to drive said driven shaft from said driving gear at the same and also at different speeds, a jack-shaft arranged at an angle with said driven shaft and driven therefrom, and vehicle driving wheels connected with and driven from said jack-shaft.

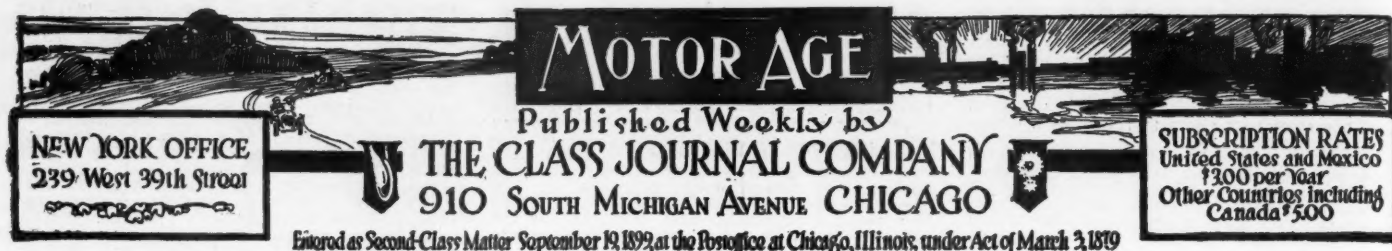
53.—In combination in a change-speed mechanism, a driving shaft, a driven shaft, a counter shaft in fixed relation to said driving and driven shafts, and operative gearing on said shafts, and inclosing casing, a bearing in said casing for one end of the driven shaft, the other bearing for said driven shaft being in the driving shaft.

54.—In combination in a change-speed mechanism, a driving shaft and a driven shaft, operatively arranged, an inclosing casing, a bearing in said casing for one end of one of said shafts, the other end of said shaft having a bearing in the other shaft, a countershaft in fixed relation to said driving and driven shafts and a plurality of gears connecting said counter driving and driven shafts.

55.—In combination in a change-speed mechanism, a driving shaft and a driven shaft, the driven shaft having a bearing in the driving shaft, and means movable on the driven shaft to engage the surrounding end of the driving shaft to rotate the two shafts at the same speed, a counter shaft in operative fixed relation to said driving and driven shafts and a plurality of gears connecting said counter, driving and driven shafts.

56.—In combination in a change-speed mechanism, a driving shaft and a driven shaft axially aligned, a counter shaft in fixed relation to said driving and driven shafts, a plurality of gears connecting said counter, driving and driven shafts, and inclosing casing, a bearing in said casing for one end of the driven shaft.

57.—In a transmission mechanism for motor vehicles, a casing, a driving shaft or shaft section projecting into said casing at one side, a bearing therefor in the wall of said casing, a gear and clutch part fixedly secured on or integral with said shaft section, and entirely on one side of said bearing within said casing, a driven shaft in said casing having a movable complementary clutch part, a counter shaft in fixed relation to said driving and driven shaft, and a plurality of gears on said shaft whereby varying speeds are transmitted to a shaft projecting from said casing.



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Uniform Traffic Rules Are Imperative

THE necessity for uniform traffic regulation laws throughout America becomes more important each year because of the larger number of cars in use in the small and medium-size cities. There are in America approximately 200 cities which may come under this classification. At present scarcely any two of them have the same traffic regulations. In one city slow-moving traffic is not required to travel close to the curb, in another city it is; in one city all vehicles must stop with the right side to the curb, in another they may stop with the left side to the curb; one city makes it imperative to the drivers to look to the rear before turning to the left across traffic or to give a hand signal, in another city such regulations are not enforced; one city requires vehicles at street intersections to keep to the right at the point of intersection when turning right or left, in another city this rule is not recognized. So examples might be cited by the hundreds, showing the entire lack of uniformity in our various cities in spite of the fact that the motor car is an interstate vehicle, it being possible to travel through ten or twenty cities of this size in a day's travel in some of the more thickly populated sections and yet there is not uniformity in controlling them.

WITH the object of testing out the various cities on the question of a uniform traffic ordinance, Motor Age wrote to upwards of 200 cities asking seventeen questions on the subject of traffic control. These covered practically every feature in a rational control system of traffic and were sent to the chiefs of police of cities from 25,000 to 200,000 in population. The replies indicated conclusively that all cities were in favor of slow-moving vehicles keeping to the curb, the percentage of opposition to this being so small as to be negligible. Practically all agreed that vehicles should stop with the right side to the curb. All favored arm signals or others when turning off the street, to give warning to following vehicles. All favored keeping to the right of the centre point of street intersections. In spite of the fact that all

favored these regulations they are enforced in comparatively few of the centers, their non-enforcement being largely due to the police and lack of co-operation by traffic-regulating bodies.

BUT the field of uniform traffic regulations does not end with the matter enumerated herewith, although those enumerated completed the list of regulations in which a uniform vote was given on them throughout the country. In the other questions the ranks were divided, some favoring one and some the other. It was expected that every city would be in favor of horse as well as motor vehicles carrying lights at night, but while 75 per cent were in favor of this 25 per cent were opposed to it. There seems no reason why police departments should be opposed to uniform lights because it is one of the biggest guarantees for safety for the person using the highway at night. It is a safety to the motorist, as he is the fastest vehicle on the road, but it is no less a safety to the horse-vehicle driver. Scores of serious accidents have been caused by failure of horse vehicles to carry lights. It would be expected that in the large metropolitan centers every horse vehicle using a highway between sundown and sunrise should have lights showing to the front and rear, but frequently these centers are the greatest offenders. If the police departments will not enforce the regulations on lights at night the motorist will be compelled to do it as a matter of personal protection.

IT is important that the majority of cities consider the question of right of way at street intersections. Whether north or south, or east or west gets the privilege will depend largely on local conditions. Heavy traffic is generally a determining factor. In New York city the major traffic is north and south, consequently this traffic is given precedence over east and west at street intersections where policemen are not stationed. It will be impossible to have uniform regulations on this traffic precedence throughout the country, but there is not any reason why each city cannot adjust the matter itself.

Commendable Patent Proceeding

THE lessons learned by continued patent litigation in connection with the recent Selden patent have doubtless had much to do with the arrangements entered into last week by the Automobile Board of Trade and the owners of the Dyer gearset patents covering arrangements whereby all members of the board of trade are given licenses for these patents. By purchasing outright such privileges for its members this organization has freed its members from the possible turmoil that would be the outcome of numerous suits for patent infringements. The attitude of the association is commendable in that it gives to its members that peace from legal unrest, which is so disrupting in business organizations. This method of securing protection under this patent to its many members frees each individual member from the necessity of investigating the validity of the patents and also searching the patent records of foreign countries. It is an excellent example of the economy in dollars and cents to associations of this nature, and members of the Automobile Board of Trade should appreciate the work of the officers of the organization in taking this step in their behalf. If for nothing else than the freedom from worry, the action is a most commendable one.

THIS patent situation, which thrust itself before the public scarcely 2 years ago although it has been in the patent offices since 1899, shows the necessity for an improvement in the patent laws, where patents are permitted to run 10 or more years through the patent office without being issued as it makes it almost impossible for the different manufacturers to be sure of their ground particularly where using parts that make it patentable or on which claims for patents have been made. This once more demonstrates the importance of limiting the period of patent issuance, making it imperative that each patent be not longer than a certain period in the patent office. Were this period cut to a matter of 1 or 2 years it would serve as an enormous protection to the manufacturers. It has been argued that with such a short period for the issuance of patents it would be impossible to make the necessary investigations for prior art, but this problem could be readily handled. Whether such patent reforms can be accomplished in the near future remains to be seen, but it is to be hoped that the controlling organizations and the members of them will continue to show that good judgment which they have displayed in the present situation.

Boillot Wins the Mont Ventoux Climb

PARIS, Aug. 12—Special cablegram—Boillot in the grand prix Peugeot won the Mont Ventoux hill-climb at Lagarenne today in 17 minutes 46 seconds, smashing Bablot's record for the hill which has stood untouched since 1909. Dedier in a Cottin-Desgouttes was second with a time of 18:38, also breaking Bablot's previous record of 18:41 for the hill. Demoraes in the Benz acquired third place. The complete results of the climb are:

Driver	Car	Time.
Boillot	Peugeot	17:46
Deydier	Cottin-Desgouttes	18:38
Demoraes	Benz	18:49
Bugatti	Bugatti	19:16
Christians	Excelsior	19:34
Thomas	Lion-Peugeot	21:14
Tongazzi	Fiat	21:51
Grua	Hispano-Sulza	22:50

TOURING CLASS

Pox	Cottin-Desgouttes	24:35
Juvanon	Schneider	28:11
Naas	Cid valveless	34:15
Thivolle	Cid	34:31
Robert	Cid	38:27
Tonndorf	Apollo	42:35

This is the fourth year in which the record for the Mont Ventoux climb has been held by the winning car of the grand prix. Boillot's Peugeot, which won the climb today, is the same car that carried off the honors of the grand prix. The record of Bablot, which was broken today, was made in 1909 in the grand prix Brazier driven by Thery at Dieppe the previous year. Boillot's average speed for the hill was 39.7 miles per hour.

Mont Ventoux stands out as the oldest, the most important and the most difficult hill-climb in France. With a total length of a fraction over 13 miles, its maximum gradient is 13 per cent over the last few hundred yards, and after a short distance at the bottom it rarely drops below 8 per cent.

ILLINOIS STATE FAIR TOURS

Springfield, Ill., August 10—Nine tours are planned by the Illinois State Board of Agriculture for Illinois motorists during the state fair, three prizes being offered in each tour. In addition to the individual prizes, which are to be furnished by the board, a grand country mileage trophy is offered by Colonel A. W. Miller, of Chicago, a member of the board. The Automobile Blue Book Publishing Co., of Chicago, also has offered some prizes, in the shape of four 1912 Blue Books, to be presented respectively to the driver showing the greatest mileage, to the woman driver making the best showing, to the car carrying the most unique and striking state fair banner, and to the car having the toughest luck. Other prize offerings are expected before the consummation of the tour.

The tour is open to any Illinois motorist, no entry fee being required. The state is covered by nine routes, starting respectively from Chicago, Freeport, Mt.

Grand Prix Peugeot Breaks Records in the French Hill Classic

Carroll, Rock Island-Moline, Jerseyville, East St. Louis, Cairo, Harrisburg, and Kankakee. Branch tours, joining the main tours, will start from Rockford, Quincy, Pittsfield and Danville, hardly a county in the state but is included in the itinerary of one of the routes. The objective point of all the tours is the St. Nicholas hotel, Springfield.

While the tour is restricted to runs within the state, motor cars owned outside the state but starting from any Illinois city or town having a newspaper will be allowed as contestants. Cars entered from Sangamon county will not be awarded prizes but will be given honorable mention, if worthy. The only requirements

are that entries must be registered with J. L. Pickering, Springfield, Ill., and the route to be traversed designated, which route must be adhered to.

Before starting a formal entry blank must be filled and the time of starting and speedometer reading must be observed by a newspaper man or other authorized person. The official start may be made only from a point on a trunk or branch route designated on the map, from which point the time of departure and speedometer reading must be officially observed as above specified.

The tour will start October 4, and all contestants must finish by 11 o'clock October 10. The first prize for each of the nine tours will be awarded to the contestant making the best average time, and consists of a gold medal or charm; the second prizes are of silver, and the third of bronze. The mileage trophy will be awarded to the county whose entries total the greatest mileage, that is the greatest total miles travelled by all contestants from any given county, its disposal to be decided by the vote of the winners.

October 12, motor day, will be one of the biggest days of the fair, and will be featured by races in which Disbrow in the Case Giant will compete, and a five-mile race between a biplane, a monoplane, a motor car, and a motor cycle. The \$600 board of agriculture trophy, won in 1910 by the Chicago Motor Club, and in 1911 by the Springfield Automobile Club, will again be contested for.

FLOODS DELAY ALCO TRUCK

Chicago, Aug. 12—The trip of the trans-continental Alco truck is just one flood after another, according to advices received from the crew at Point of the Rocks, Wyo. Just as the motor freighter, which is now engaged in the first delivery of merchandise from one end of the country to the other, was going well after experiencing ten cloudbursts in 8 days, it ran into another heavy rain-storm that hung it up along with four trans-continental touring parties and two prairie schooner outfits.

Reports from the Wyoming country are to the effect that floods are worse at this time than in 14 years and travel by motor through certain sections has been made impossible by the conditions of the road. From latest information the Alco truck is on its way towards Evanston, Wyo., where it is taking a trail towards Salt Lake City; from there the route will lead to Reno, San Francisco and Petaluma, Cal., where the load of merchandise will be delivered to the Carlson-Currier Soap mill. Announcement is made that after the cargo is delivered, another load will be taken on and hauled overland to Los Angeles, adding 500 miles to the journey.

Coming Motor Events

*August 30-31—Elgin road races; Chicago Automobile Club; Elgin, Ill.

September 2—Track meet at Winnipig, Canada.

September 3-6—Chicago Motor Club's truck demonstration.

*September 9-12—Commercial vehicle run; Chicago Motor Club.

September 11-14—Third annual reliability run of Automobile Club of Buffalo, Buffalo, N. Y.

September 17—Grand Prix; Milwaukee, Wis.

*September 20—Wisconsin challenge and Pabst Trophy races; Milwaukee, Wis.

*September 21—Vanderbilt road race; Milwaukee, Wis.

September 17-20—Fire engineers' convention; International Association Fire Engineers, Denver, Colo.

September—Track meet; Universal Exposition Co., St. Louis, Mo.

October 4-5—Track meet; Sioux City Auto Club, Sioux City, Ia.

*October 7-11—Chicago Motor Club reliability run, Chicago.

October 12—Track meet; Rockingham park, Salem, N. H.

October 24-25—Banta Trophy Team match, Chicago Motor Club.

November 6—Track meet; Shreveport Automobile Club, Shreveport, La.

*Sanctioned by A. A. A.

SHOWS

September 23-Oct. 3—Rubber show, Grand Central palace, New York.

September 26-Oct. 6—Exposition agricultural motor cars, Bourges, France.

November 8-16—Olympic show; overflow November 22-30 Agricultural Hall.

December 7-22—Paris salon.

January 4-11, 1913—Cleveland show.

January 4-11—Montreal show.

January 11-18—New York pleasure car show; Automobile Board of Trade; Madison Square Garden and Grand Central Palace.

January 11-22—Brussels, Belgium show, Centenary Palace.

January 20-25—New York truck show; Automobile Board of Trade; Grand Central Palace and Madison Square Garden.

January 20-25—Philadelphia show.

January 27-Feb. 1—Detroit show.

February 1-8—Chicago show.

February 10-15—Minneapolis show.

February 17-22—Kansas City show.

March 3-8—Pittsburgh show.

March 8-15—Boston show.

March 17-22—Buffalo show.

March 19-23—Boston truck show.

March 24-29—Indianapolis show.

Milwaukee Now Starts Sale of Tickets

Mail Orders for \$20,000 Worth of Seats for Grand Prix and Vanderbilt Road Races Reported—Train Arrangements Being Made—Work on Course Progressing Rapidly

MILWAUKEE, Wis., Aug. 13 — The actual sale of seats and admission tickets for the Vanderbilt cup races at Milwaukee September 17, 20 and 21, began in Milwaukee on Monday, August 12, and the pasteboards were placed on sale in a dozen of the largest cities simultaneously today. Manager Bart J. Ruddle of the Milwaukee Automobile Dealers' Association personally placed the seat sale in Chicago this afternoon. The Chicago Motor Club and Chicago Automobile Club will be in charge. The New York sale will be carried on at 1784 Broadway, in the United States Tire Co. building.

Meanwhile the mail order sale proceeds briskly and now amounts to more than \$20,000. While the box sections have been pretty well picked out, there are still some choice boxes left, which is the case with the parking spaces immediately flanking the grand stand and the official paddock opposite, wherein there will be the pits, the official stands, press and telegraph towers and executive offices.

While there will be no club stands, the M. A. D. A. has arranged to reserve approximate sections of the grand stands for the larger motor clubs of the country. The Wolverine A. C. of Detroit will pull off a stunt similar to that at Indianapolis, motoring to Milwaukee in a body and watching the contests from an exclusive section. The two Chicago clubs are planning like affairs. The Milwaukee Automobile Club is inviting all of the clubs affiliated with the A. A. A. to come to Milwaukee and make its clubhouse their home during the week.

Manager Ruddle has been officially advised by W. W. Lifsey, general eastern agent for the New York Central lines, that in addition to the arrangements made by the lines to handle the extra passenger traffic during the race carnival time, a special train de luxe will be run from New York city straight through to Milwaukee, over the Northwestern or the Milwaukee road from Chicago.

The train will really be the special of the Automobile Club of America, which is arranging for the party. It will consist of new steel compartment sleeping cars, buffet smoking cars, dining cars and observations, and will leave the Grand Central in New York about noon on Sunday, September 15, arriving in Chicago at noon September 16 and Milwaukee during the afternoon. The entire train will be parked in some convenient and accessible spot in the Milwaukee or Northwestern yards and will serve as a hotel for those who

are unable to obtain or do not desire hotel accommodations in the city during the 5 days' stay. The train will leave Milwaukee on Saturday night, September 21 or early Sunday morning, September 22, arriving in New York approximately 24 hours later. The A. C. A. has secured an agreement whereby the cost of the trip will be \$70 per person, two in a room, and \$90 per person, one in a room. The rate includes round trip fare, all meals en route and occupancy of the cars during the 5 days in Milwaukee.

Teddy Tetzlaff, who holds the world's road race speed record, brought the entries of two Fiats to Milwaukee in person on Sunday. Teddy was on his way from Los Angeles to Akron, O., before going to Elgin and then Milwaukee. He will pilot a Fiat in the grand prix on September 17 and another in the Vanderbilt on September 21.

The Bosch Magneto Co., of New York, is the first concern to announce the list of special or added awards to be made to the winners in each of the principal events, the Vanderbilt and the grand prix. The winner of the A. C. A. gold cup will receive \$500 in gold from the Bosch people; the winner of second place, \$200, and third, \$100. Two hundred dollars in gold will go to the winner of the Vanderbilt cup; \$100 to second high and \$50 to the third place pilot.

The International Harvester Co., which has one of the largest of its numerous plants in Milwaukee, has joined the ranks

of the big donors to the racing guaranty fund with a cash donation of \$1,000 and the further gift of the use of \$20,000 worth of power apparatus and road building equipment, estimated to amount to \$2,500. The company builds all of its high-duty tractors in the Milwaukee works and much of its special road construction equipment, including drags, levelers, scrapers and dump wagons.

An inkling of how good a foundation the roads selected for the course have, as the result of years of improvement and travel, may be seen from the experience of a new stretch upon which work was commenced early last week. Shortly after work was started it commenced to rain and the road seemed an impassable sea of mud. The scrapers were sent at it in a heavy downpour and when the sun came out for a short time the surface of the road was as dry as a bone. It has rained every day since, but beyond wetting the surface, the rain has not affected the flint-like macadam surface, the first layer of which was laid years ago when the road was a military highway.

It has been finally determined that the course will consist entirely of macadam and that no part of it will be concrete. It was impossible for the county board to secure a guarantee from the contractor to finish the work by September 5.

BUFFALO ANNOUNCES A CONTEST

Buffalo, N. Y., Aug. 12—The third annual 800-mile reliability tour of the Automobile Club of Buffalo will be run on September 11, 12, 13 and 14. This decision was reached last evening by the club's contest and runs committee, of which Orsen E. Yeager is chairman. The tour this year will be known as a grade 3



FLANDERS ELECTRIC BLAZING GLIDDEN TRAIL NEAR BROWNTOWN, IND.

Uncle Sam Promising Bumper Crops

reliability contest. The tour will be open to stock and non-stock cars and while penalties will be imposed for late arrival at controls and for work done on the cars, no technical examination will be made either before the start or at the finish of the contest. The course which the contestants will be required to cover in the 4 days of the tour will be approximately 800 miles in length and will cover a large section of western New York and probably a portion of Pennsylvania.

GOPHERS MAKE LONG RUN

Albert Lea, Minn., Aug. 12—The first annual sociability tour of the Albert Lea Automobile Club was a great success, although the roads were not the best. The run was from Albert Lea to Waterloo, Iowa, and return, taking 2 days and covering a distance of about 250 miles. While the weather was threatening the run was not marred by very much rain and yet heavy showers preceding made the roads heavy most of the way down, but on the return the highways were in fine condition most of the way. The party consisted of forty-two cars and 175 people, there being many women and a few children. The start was made from this city Thursday morning, August 8.

PROGRESS OF A. A. A. PATHFINDERS

Corinth, Miss., Aug. 13.—Special telegram—The Flanders electric has reached this city on its way to New Orleans blazing the trail of the A. A. A. tour. The trip through Kentucky, Tennessee and Mississippi has been an eventful one, but the car has made good progress. The run here today was a strenuous one because of washouts and other road difficulties. The run to Memphis, 100 miles, promises to be even more exciting.

Indications Are That Actual Harvests Will Be Larger Than Indicated by Official Figures, Which Means Business for Motor Car Dealers—Winter Wheat Yield Big

WASHINGTON, D. C., Aug. 12—Bumper crops are assured, according to the August crop report of the United States government, and in all probability the actual harvests will be larger than those indicated by the official figures. The estimates are dated August 1 and in the days that have intervened since then, favorable progress has been made in all lines of agriculture. Perfect crop weather has been experienced and much improvement must have occurred since the first of the month.

The government figures show that the yield of winter wheat has been an average of 15.1 bushels to the acre and while the acreage is smaller than last year by 5,623,000, the average yield is .6 bushel larger per acre, bringing the official estimate of the yield to 390,000,000 bushels. This is 64,000,000 bushels smaller than last year in the departmental estimate. That the estimate for 1911 is too high and that of 1912 too low is generally admitted. The official figures of last year have been revised to conform with the data secured by the census bureau which reduces the acreage to 29,162,000 and the yield to 430,000,000.

A report received from the Kansas bureau of agriculture shows that in that state alone the official figures for this year as to winter wheat acreage are 600,000 acres too low. This would account for a difference of 11,000,000 bushels of wheat in Kansas. Thus, according to close students of the situation, the weight of prob-

ability points to a yield of winter wheat not far from 400,000,000 bushels with the chances favoring a larger yield rather than a smaller.

The condition of spring wheat is placed at 90.4, a gain of 1.1 since July 1. Since August 1 the condition has improved materially. Last year the yield of spring wheat was 190,000,000 bushels. The August 1 report indicates a yield of 290,000,000 bushels and the favorable weather during the early part of this month when spring wheat is in the final stage of ripening, makes it certain that the total yield will be larger.

The corn crop is estimated at 2,811,000,000 bushels, a decrease in condition of 1.5 points since July 1. Oklahoma makes the poorest showing in corn this season with a condition of 65, against a 10-year average of 76. Iowa, a huge producer, has a condition estimated at 89, against a 10-year average of 83. Oats crop is in splendid condition all over the country.

Summarized, the grain crops of the country are estimated by the government to be about as follows:

Grain	Acreage	Estimated Condition
Winter wheat.	25,744,000	390,000,000 ...
Spring wheat.	19,201,000	290,000,000 90.4
Corn	108,110,000	2,811,000,000 80.
Oats	37,844,000	1,207,000,000 90.3
Other crops except cotton.	17,900,000	675,000,000 ...
Hay, tons....	49,209,000	73,000,000 ...

Totals compared with last year:

Grain and crops	1912	1911
Grain and crops	5,373,000,000	4,616,000,000 ...
Hay, tons....	73,000,000	47,000,000 ...

The difference in money value is in the neighborhood of \$1,200,000,000 in favor of the current season.

EDWARDS CHOOSES FACTORY SITE

New York, Aug. 12—Official announcement has been made that the Edwards Motor Car Co. will be located in the plant formerly used by the United States Metal Products Co., at Long Island City, for at least 1 year. The plant, which is now in progress of being remodeled for the use of the motor car company, has a floor space of about 50,000 square feet, all on one floor. The company has secured a lease for 1 year with an option to renew it on substantially the same terms for another year in case it is desired. It is the intention of the company to erect its permanent plant in New Jersey; but the time for such a move has not been definitely fixed. With regard to the establishment of a big assembling plant for trucks at Louisville, an option has been secured for such an undertaking, but whether it will be exercised depends largely upon the success that attends the financial negotiations.



NATIONAL ENDURANCE RUN PATHFINDER NEAR OTTEKA, O.

Oldfield Bill Reported to Congress

WASHINGTON, D. C., Aug. 10—Of vital interest to the motor car and accessory industries is the report made to congress this week on the Oldfield patent bill. Broad changes in the patent laws and recommendations for changes in the equipment and organization of the patent office are outlined in the report. The bill has been fought bitterly by manufacturers all over the country.

It seeks to make great changes in existing conditions, one feature being a section prohibiting a manufacturer from bringing suit for infringement of patents against a dealer who sells the manufacturer's goods at a less price than that fixed by the manufacturer as a retail price.

"As to the wealthy corporations," says the report, "it has become obvious that the skillful handling of patent cases places them at an untold advantage against their smaller competitors. For them a well organized patent department is a reliable machine, where money is the lubricant. This machine, in its slow but grinding way, can reduce to pulp any of the smaller competitors. For large corporations, the maintenance of such a machine, with a staff of lawyers and experts, is merely a small side expense. By its aid they can bluff their weaker competitors into quick submission. If this is not successful, they can drag out a patent suit indefinitely until the weak opponent, unable to bear the ever-increasing expenses, collapses and withdraws."

The report continues: "There is widespread dissatisfaction with the operation of our patent laws. The statutes now in force directly affecting patents have remained practically unchanged since the revision of 1870. Meantime changes fundamental in character have occurred in our industrial conditions."

The report holds that manufacturers abuse the present system of patent rights and that there are defects of administering the patent laws, to be found both in the patent office and in the courts. "No complete remedy," says the report, "for existing evils is possible without removing by adequate legislation these two great causes of dissatisfaction."

The "evils" spoken of in the report cover a broad field of activity. The habit of manufacturers fixing a retail price for their goods is one, the custom of manufacturers of patented articles stipulating in what manner they shall be used is another; and the third evil is a phase of the trust problem, whereby owners of patents suppress them with a view to killing competition.

"As a remedy for these evils," says the report, "it was proposed to limit the absolute right now vested in the owners of patents under which they determine to what extent and in what manner the use

Broad Changes in Patent Laws of the Country Are Recommended

of the patent, or patented article, shall be permitted. With this in view, it was proposed to take away specifically the right recognized by the lower federal courts to fix under the patent law prices at which articles shall be sold at retail, and also to take away the right recently confirmed in the mimeograph case to prohibit patented machines from being used otherwise than in connection with unpatented articles furnished by the vendor or licensor. The existing provisions of law under which the patent monopoly in a new invention is granted for a limited period clearly operate beneficially to the people so long as the patent is used for its legitimate purpose."

The bill has a clause limiting a patent right to 19 years exclusive of the time actually consumed in the patent office in considering it, or by the courts in deciding some phase of it. "This provision," says the report, "is aimed at the procrastination that has become proverbial on the part of applicants for patents."

The bill seeks to upset the present practice of considering as an infringement of a patent any sale of any patented article below the price fixed by the manufacturer. For instance, many well known articles of everyday use, particularly in the motor car accessory trade, have the same retail price the world over. This is a matter controlled by the manufacturer and any cut-rate sale is liable to a suit in the United States courts on the ground that it is an infringement. The bill would make it not a matter of suit on the patent, but simply a matter of contract with manufacturer and dealer.

The Oldfield bill will not be considered at this session of congress, but will be pushed at the beginning of the next session in December.

FRENCH EXPORTS AND IMPORTS

Paris, July 26—An increase in exports of more than \$4,000,000, and a very slight increase in imports, with the United States still standing firm, are the outstanding features of the French motor returns for the first 6 months of 1912. During the half year motor car imports rose to the sum of \$1,337,940, compared with \$1,316,940 for the same period of 1911. The greater proportion of the business was done from January to the end of May, the imports falling off during the month of June, and the cars from England, Germany and Belgium showing a marked reduction in number. The total was only obtained by reason of the large amount of business done by America with France.

The French national industry has every reason to be satisfied with volume of business done during the half year, for the actual increase, compared with the first 6 months of 1911, totals \$4,155,180. Increased business has been done with England, Belgium, Germany, Switzerland, United States, Brazil, Argentine Republic, and Algeria. The most important feature of the foreign trade is the great increase with Belgium. From \$2,747,640 in the first half of 1911, the volume of business has increased to \$4,330,320 during the current half year. Great Britain still stands at the head of the list as the most important customer of France, but the increased trade with that country has been very slight, and the total with Belgium comes close to that with England. The following are the official figures of French motor exports for the first 6 months of 1912.

	Half year 1912	Half year 1911
Great Britain	\$ 5,932,380	\$ 5,835,480
Belgium	4,330,320	2,747,640
Germany	1,687,920	1,308,240
Argentina	1,515,800	899,400
Algeria	1,477,260	1,021,320
Brazil	987,120	675,120
Switzerland	540,840	441,480
United States	543,180	295,500
Italy	445,880	527,040
Spain	333,340	252,540
Russia	178,140	262,800
Austria	108,540	230,760
Turkey	85,740	237,240
Other countries	2,195,160	1,471,980
	\$20,361,720	\$16,206,540

MILWAUKEE'S NEW MOTOR ROW

Milwaukee, Wis., Aug. 10—Milwaukee will have a motor mart comparing with that of any city of its size in the country within a year's time, if the plans of Milwaukee and Chicago landowners and real estate men, already maturing in a conspicuous manner, do not miscarry. The location of the motor row will be on Grand avenue, between Thirty-fifth street and the Grand avenue viaduct, a \$2,000,000 concrete structure connecting Milwaukee with the western world.

The Packard will be the first to enter the new row. The Packard Motor Car Co. of Chicago has purchased a plat 50 by 200 feet in size at the southwest corner of Thirty-fifth street and Grand avenue and in 30 days will have broken ground for its new Milwaukee branch house, now occupying a large building at Grand avenue and Seventh street. Several interesting announcements in regard to sales of acreage in the territory are expected momentarily. Deals have been closed but are being kept quiet for the time being.

The new motor row is in a territory just beyond the city limits of Milwaukee at this point. That annexation will follow the sales of the property is an assured thing. The former owners of the property fought annexation for years, so that at present there is a strip of approximately five blocks bordering on the west city limits which has never been annexed,

Americans Book Space in Paris Show

while the adjoining territory for miles is part of the city proper.

The motor row will not stop at the new Grand avenue viaduct, however. The county is building a 120-foot boulevard from the west end of the viaduct to the Hawley road, 5,000 feet beyond, which will be snapped up by the promoters of the concentration idea and platted for motor car houses. In fact, options have been taken on more than one half of the frontage along the Grand avenue boulevard west of the viaduct.

At present there is no motor mart or motor row in Milwaukee. Branches, agencies and garages are scattered all over the city. No effort has ever been made to concentrate the industry, although the district around Fourth and Poplar streets once made a bid to becoming motor row. Not more than three houses are to be found in one block at this time.

R. M. LLOYD MAKES A CHANGE

New York, Aug. 12.—R. M. Lloyd, who has been vice-president of the General Vehicle Co. for several years, resigned recently from that corporation to take a position as assistant to the president of the International Motor Co., manufacturer of the Saurer, Hewitt and Mack trucks.

Formal announcement of the change was not made until after it had taken place and Mr. Lloyd had been installed in his new work. No announcement has been made by President Coleman of the International or President Wagoner of the General Vehicle Co. as to the significance of the move.

ATLAS DEAL HANGS FIRE

Indianapolis, Ind., August 12—Although this was the day fixed for the sale of the Atlas Engine Works plant and property, Fred C. Gardner, receiver for the company, had no report to make to the court. Judge Clarence Weir is out of the city, but it is understood that upon his return the time for making the sale will be extended.

M. L. Thomsen, of Cleveland, who some time ago said a company of eastern capitalists would submit a bid, sent a telegram saying the men with whom he was associated had been unable to agree on the matter of making a bid. Detroit capitalists, who were said to have been headed by Walter E. Flanders, and who were expected to bid, have withdrawn as prospective bidders. It is reported the men who expected to be interested in this deal also have disagreed.

It is reported there are other prospective bidders in sight, but their identity is not being made public at this time. The proposition is a large one to handle, including assuming bonds for \$1,050,000 secured by a mortgage; another bond issue of \$105,000 and receivership expenses and mercantile accounts aggregating about \$80,000.

Every Inch of Room in Salon Has Already Been Taken by the Makers

PARIS, July 26—Nearly 30,000 square yards of exhibition space have been applied for in connection with the next Paris motor show to be held from December 7 to 22. Every available inch of space has been booked and there is a big waiting list of firms hoping to get into the exhibition by the withdrawal of those already given stands. This year's show, the thirteenth of the series, is distinctive by reason of the large number of American firms taking part. The United States motor industry is represented by Cadillac, Buick, Case, Century, Flanders, Ford, Hupmobile, Mitchell, Oakland, Reo, and Overland.

American accessory manufacturers are generally represented by French agents, who show the products on their own stands and under their own name. Among those having distinct stands are Rushmore lamps, Klaxon, Acheson Oildag, Warner speedometers, Vacuum Oil Co. Only one American tire manufacturer will be represented at the show, this being the Goodrich concern, exhibiting through its European house. American machine tool manufacturers will be represented by Potter & Johnson. Among the few electric vehicles will be those of the Anderson Electric Car Co. This list of American concerns exhibiting at Paris is evidence of the important position the United States manufacturers are securing on the European market, for when the last show was held in Paris, 2 years ago, the only American-built car on exhibition was the Ford.

With every available inch of space booked up, the French manufacturers anticipate a bumper show. The increase has been brought about by the larger number of home firms wishing to compete, and by the increased applications from America and England. Up to the present the English manufacturers have not considered it advisable to take part in the Paris salon, especially as the French exhibition followed very closely after the one at Olympia. For the first time this year many of the leading British manufacturers have applied for space, among the more important being Argyll, Austin, Coventry Chain Co., Daimler, Hele-Shaw, Humber, Napier, Rolls-Royce, Star, Sunbeam, Vickers, Wolseley, and a number of accessory and tire manufacturers. Contrary to expectations, the requests for space from motor cycle manufacturers is below the average, but although this gives bigger space for the cars and accessories, numbers will be unable to get into the hall.

The Paris show is now a purely manufacturers' concern, being organized by the three leading trade associations and run under a profit-sharing system. All exhibitors are entitled to share in the profits, although those belonging to the trade associations participate under more favorable conditions than outsiders. Stand positions are to be awarded by the drawing of lots, foreign exhibitors taking part under the same basis as the home firm, provided their own show organizers give equal facilities to French firms. By an agreement between the aeronautical and the motor car manufacturers, the exclusive use of the Grand Palais—undoubtedly the finest hall in the world for this purpose—has been obtained from October to January. The aeroplane makers have the first display, then turn the hall over to the motor car manufacturers for a second exhibition.

DEATH OF MILWAUKEE DEALER

Milwaukee, Wis., Aug. 12.—Milwaukee motoring circles were shocked today, by the news of the death of Charles G. Habegger, agent for Firestone tires and partner in the firm of Theodore Habegger, one of the largest concerns in the state engaged in the manufacture and repair of cars, trucks, tires and parts. Mr. Habegger's body was found lying in an abandoned warehouse and a pistol nearby told the story of his death. Despondency over ill health is believed to have been the reason. He had recently returned from a 5 months' trip through the Pacific coast country. A pathetic circumstance is that Mr. Habegger committed suicide directly over the spot where he was born 39 years ago. At that time his parents' home occupied the site of the warehouse.

PREST-O-LITE SUES SEARCHLIGHT

Indianapolis, Ind., Aug. 12—Another suit defending its patents has been brought in the federal court in this city by the Prest-O-Lite Co. The new case is directed against the Searchlight Gas Co. of Ohio and is very similar to cases which have been brought against other concerns. An injunction against the infringement of the Prest-O-Lite patents and an accounting are demanded in the suit. It is alleged that the Searchlight company has refilled Prest-O-Lite tanks. These tanks are trademarked and it is alleged that refilling the tanks is an infringement of this trademark. The Searchlight Gas Co. has an office in this city.

FOSDICK JOINS HUPP FORCES

Detroit, Mich., Aug. 12—Harry Fosdick, formerly sales manager of the Stevens-Duryea Co., has been appointed assistant general manager of the Hupp Motor Car Co. His particular work will be the supervising of agencies and sales distribution.

Minnesota Cars Check in at Winnipeg

Fourth Annual Reliability Run Invades Dominion—Small Field Contesting, but Turnout Stimulates Motoring Interest in the Northwest—Marmon and Cadillac Perfect

WINNIPEG, Man., Aug. 11—Minnesotans in their fourth annual reliability tour, after 3 days of road experience, have found that northern Minnesota soil and that of Manitoba may be right to raise grain, but that it is not designed for touring after a rain. Gumbo soil tried the power plants ineffectually, but caused all sorts of annoyances, including the necessity for twice cutting the running schedule 2 miles an hour all round.

The start was made Thursday morning from the Automobile Club of Minneapolis, with nine contestant cars and two non-contestants. One of the former, the Staver-Chicago, withdrew at Hallock Saturday afternoon, due to trouble with the steering gear and other slight difficulties, but expects to pick up the trail at the American border tomorrow. The McFarlan and Cutting entered cars but failed to check out. The Packard non-contesting car is at Hallock with a gear stripped and the differential housing wrecked. The Stoddard-Knight pacemaker car, after a series of slight accidents to tires and fenders, cracked its crankcase over a railroad track 3 miles east of Red Lake Falls. The hole was patched and the pacemaker resumed the lead the next day.

For the first day the run was through familiar Minnesota scenery, over fair roads with stretches of excellent highway, generally well posted with road signs and natives not hostile to the motor car, because the motor car is owned generally by the farmers. Tremendous standing and already harvested crops were seen everywhere and prosperous looking people expecting a rich year after the crops are sold. The first night control was Wadena in a new district of the state for most of the tourists, but already awake to the value of the motor car to the country resident, farmer or business man. Up to this time the experiences of the tourists were normal for Minnesota.

The second day's run was through a country which had been drenched with rain and the outlook was such that the chairman cut the running time 2 miles an hour. The wisdom was evident in a short time. Although the cars had put through a heavy rain on the sandy roads the afternoon before mechanical difficulties were comparatively nothing compared with the conditions they encountered to put a motor car out of commission in the soil which began to change to clay and then to the mucilaginous mass called gumbo, which never lets go its grip until dried and then knocked off.

Tons of water went over the heads of the drivers as chuck holes were encountered and the deceiving liquid required watchfulness of the car crews to insure safety. Road work galore was observed, but the highways had not reached the condition of medium perfection found the first day. The run therefore was slow. Tire trouble was the main hazard for the second day, which ended for the night at Thief River Falls. Considering the recent settlement of the intervening country and that a long part of the road was through the White Earth Indian reservation, the tourists were generally well satisfied. The changing scenery as the northern boundary was approached had entertained the passengers and lightened the rigor of the run.

The noon control was made at the home of a halfbreed Indian family where luncheon was served by the descendants of the Ojibways and one of the hostesses recited right on the spot the descriptions of the land and her people in Longfellow's Hiawatha.

On the third day was the grief. The gumbo had dried and left ruts deep and hard, and the mire was so deep at points that it engaged the radius rods on the front of the runabout class cars, and even touched the hubs of the touring machines. It was a day of Samaritanism. Entrant cars stopped to pull out other contestants and the non-contestant cars and official wagons did like service indiscriminately. It was discovered in upper Minnesota that hundreds of miles of highway are being built by the state high above the marsh land level, but either are not ready to use or, where usable, are more fit for wagons and buggies. The result was slow running and a necessity for detouring along the right of way of the Great Northern road. This led to much trouble as at intervals there were mire holes in

the soft prairie land, only recently reclaimed by state ditch work, easy looking hindrances but, in fact, deceitful spots calculated to worst the best car.

When the border line was reached—the Canadian customs officials were induced to allow the foreigners to enter at only slight cost—a change was noted in the character of the scenery as the road wound along the lazy Assiniboin river and through the old Hudson bay trail settlements. The soil is all gumbo, the road work of similar character and the detour method a necessity. The run was slow but nevertheless in most cases the sturdy drivers, skilled in taking advantage of short, easy strips, got in on schedule.

It was noticed between Thief River Falls and Emerson that few motor cars were met, although the people look prosperous. The farm plants are magnificent and the crop outlook splendid. This is charged to some extent to the fact that farmers are busy harvesting and that the tour is practically a scouting trip over a route not yet the main tourist road from the twin cities to Winnipeg. That will be taken on the return trip beginning tomorrow and ending Thursday noon.

Every sizeable town on the run has its gasoline and oil depot, fair to good hotels, interesting and courteous people, skilled mechanics and seasoned motor drivers who are up on every emergency device known for the stranded visiting motorist. The trip is expected to be a great sales tour for the medium and low-priced car dealer and manufacturer.

REPUBLIC SUES G & J

Indianapolis, Ind., August 12—The Republic Rubber Co. of Youngstown, O., has brought suit in the federal court in this city against the G & J Tire Co., alleging infringement of patents and asking an accounting. It is charged that the G & J company has infringed on patents for the improvement of tires, granted in 1908 to Tod J. Mell of Youngstown, O. While the G & J Tire Co. has its factory and offices in this city, it is incorporated under the laws of New Jersey.

STANDING IN TWIN CITIES-WINNIPEG RELIABILITY RUN

ENTRANTS, CLASS E, GRADE III						Penalties first 3 days
No.	Car	Model	Div.	Driver		
1	Marmon	32	5	Bohn Fawkes		0
2	Hupmobile	H 1912	2	Warren Munzer, Clarence Munzer		7
3	Studebaker 20	S 1912	1	William Soules		9
5	Cadillac	30 1910	3	A. Zekman		0
7	Mitchell	5-6 1912	4	George Murphy		3
8	Paige-Detroit	Brunswick 1912	2	Ed Fox		106
9	Warren-Detroit	30 K 1912	2	Henry Rockelman		1
10	Staver	Greyhound 1913	5	Noah Moss, I. B. Haviland		2
11	Reo V.	1912	2	N. Bass		40
NON-CONTESTANT, GRADE IV						
12	Buick	21 1911	2	H. G. Blanchard		
13	Packard	30 1909	7	Charles Smith		

Pilot, Paige-Detroit; J. H. Price, pilot; driver, Mat Nides. Pacemaker, Stoddard-Knight; driver, H. K. Harrison. Press car, Pierce Arrow 66; driver, O. A. Britton.

*Withdrawn end third day

Elgin Prospects Continue to Improve

CHICAGO, Aug. 12—Prospects for a brilliant renewal of the annual Elgin road races as promoted by the Chicago Automobile Club and the Elgin Automobile Road Race Association are bright indeed. The entry list continues to grow daily and it looks now as if the field would be made up of a fast lot of cars, including several of foreign make.

Within the past week the entry list has been added to considerably. Teddy Tetzlaff, holder of the world's road record, reached Chicago Saturday and signed blanks which book him for competition in both the Elgin trophy and the free-for-all on the second day of the meet. He is to drive the smaller Fiat which he handled at Indianapolis. In addition Tetzlaff states E. E. Hewlett, his backer, will send on the grand prix Fiat for the free-for-all, which will be driven by Dave Lewis, another California star.

A Mercedes also has been dropped into the speed battle, the entry of George Clark having been secured at Galveston by representatives of the Chicago Automobile Club. Clark intends following Tetzlaff's example and will run in both races on the second day. This makes the roster of stars read as follows: Bruce Brown, Mulford, Tetzlaff, Bergdoll, Hughes, Zengel, and Merz. No news has been received from France relative to the offers of E. C. Patterson and R. J. Collier to import two of the Peugeots, but it is believed an answer will be had in a day or so.

One entry has been booked for the race for cars 230 inches and under, which was added to the card last week, the nomination coming from F. S. Duesenberg, who has declared the little Mason which did so well in the last Algonquin hill-climb. Harry Endicott is to drive the car. It is likely also that the Mason will go in one of the races Saturday. The Studebaker entry and that of the Herreshoff are expected this week, which will make this race certain.

Heavy rains the past few days have delayed the work on the course, but it is expected that within a day or so half a dozen gangs of men will get busy making the repairs which are needed. The military has been secured and now there seems to be no stumbling block in the way of the promoters.

BURMAN AT CLEVELAND

Cleveland, Aug. 10—The clipping of 4 seconds from the 1-mile dirt track record for Cleveland made 3 years ago by Barney Oldfield on the Old Glenville track was the sum total of achievement at the all star meet promoted by the Burman-Moross combination last Wednesday, as a feature of the Eagles' convention.

Burman, driving the 110-horsepower

Teddy Tetzlaff Enters Fiat for Both Races the Second Day —Clark's Mercedes Also Will Be a Contestant—Mason First Nominated in Small-Car Event—More in Sight

Benz, made the mile in :49%. Oldfield's best time here was :53. A second attempt by Burman to lower records was made in the new 300-horsepower Benz, which was given its first track try-out here. As a speed trial, the exhibition was a failure. After several good starts, Moross, who assumed the joint role of manager and referee, announced for Burman that carbureter troubles had developed, with would prevent a proper trial. A heavy down-pour of rain added the last touch of disappointment to the monster crowd, the largest ever seen at the Randall track. Summaries:

Five miles, non-stock—Burman, Cutting, won, time 5:06; Kyle, White, second; Brown, Stoddard-Dayton, third.
Class E, non-stock—Kyle, White, won, time 4:39%; Stoddard-Dayton, second; Flanders, third; Cutting threw a tire and race went to the White.
Three miles, non-stock—Burman, 999 Ohio, won, time 2:43%; Kyle, White, second; Hickman, Mercedes, third.
Three miles, class D, non-stock—Burman, 999 Ohio, won, time 2:47%; Kyle, White, second; Mercedes, third.

A race meet of the old-fashioned kind, in which the events are confined, with few exceptions, to stock cars, is planned for September by the Cleveland Automobile Club. With the exception of a single exhibition event, in which it is planned to feature Oldfield, who is an old favorite here, and a race for a cup to be donated by the club, and confined to Cleveland race drivers, the events will be real races between cars of standard construction either made or represented in Cleveland. The date for holding the race is fixed tentatively as September 15. The Randall track will be obtained if possible.

RAIN STOPS TEAM MATCH

Chicago, Aug. 12—Torrents of rain, coupled with reports of wretched road conditions, caused the abandonment of the second annual team match between the amateurs and tradesmen of the Chicago Motor Club after half of it had been run. Nine amateurs and ten tradesmen started in the match which left Chicago last Thursday morning for St. Joseph, Mich. The run over, 118 miles, was made easily, the weather being good, but the roads in Michigan sandy. At the end of the first half of the match the amateurs only had 3 points against their team, while the tradesmen were loaded down with 170, the bulk of them coming because one of the cars came in after the 2-hour limit, the delay being caused by tire trouble. Then it started to rain and it kept it up all that afternoon, all night and it was raining in the morning. Reports about the condition of the roads were so terrifying that the majority of the contestants

decided that inasmuch as the match only was a friendly one, there was no use undergoing the hardships of a mud plug and possibly meeting with accidents. So the entire match was called off. Some of the hardy ones drove home and found to their surprise that the roads weren't so bad after all and that it would have been possible to have completed the run. Others shipped their cars home by steamer.

GEORGIANS IN MUD PLUG

Atlanta, Ga., Aug. 7—The idea, novel in the south at least, of a 1-day tour within the confines of a single county was given a workout here today when the 1-day route around Fulton county, Ga., was dedicated.

Of the thirty-two cars entered twenty-five started and sixteen finished. That no more finished is due to the fact that in the 125-mile route there were virtually 10 miles, in various short stretches, of red clay road. And this red clay road was transformed by a smart shower in the morning into 10 miles of bottomless mud. There wasn't much of it but it was a plenty. If there had been a lot more nobody would have finished at all. Even under these trying conditions few cars were put out by mechanical troubles. Two of the nine which did not finish dropped out on account of the rain. Two were knocked out by tire trouble. One ran out of gasoline and had to send to Atlanta for a supply. Two had engine trouble. The rest did not report.

Three prizes were offered, two for the cars which completed the circuit in the time that most nearly approached the sealed schedule fixed by Mayor Courtland S. Winn; one for the car with the best tire score. The time set by Mayor Winn was 7:50:31 for the 125 miles. Owing to the fact that the course was slowed down materially by the rain, nobody made the circuit at that speed and even though 30 minutes were added to the running time, owing to a delay at the noon control, the winning car ran more than 15 minutes behind the time set in the sealed schedule. The winner was a Velie, entered by the Velie Motor Co., of Atlanta. This car went through the last Glidden tour, the last tour-around Georgia and was used for scouting out the 1-day tour. This car made the circuit in 8:37:48. Next to it was an E-M-F, entered by Woods White. Its time was 8:40:51. Twelve cars were tied with perfect tire scores, and when the matter was left to lot the winner turned up in Councilman Knight's E-M-F.

French Army Tries Out Motor Trucks

Annual Test, Just Completed, Most Successful, No Failures Being Recorded in Road Trials
—Sixteen Firms Represented by Sixty Vehicles—Nation Decides It Is Cheaper
to Subsidize Privately-Owned Machines Rather Than Maintain a Fleet

PARIS, Aug. 2.—Military France prefers to subsidize privately owned motor trucks rather than maintain a large fleet of vehicles which never can be fully employed except during general manoeuvres or on the outbreak of war. By offering \$600 at the time of purchase and \$200 for each of 3 following years it is possible to have at the disposition of the army whenever needed a very large and perfectly maintained fleet of motor trucks. But before the private owner can enter into the subsidy agreement with the government, the manufacturer must have the type of vehicle approved after strenuous tests on the road and close examination at the hands of technical experts.

Trials Now Annual Event

As new models are brought out every year, these army trials are now an annual event, and as it is to the advantage of every manufacturer to be able to offer his trucks to the public with the possibility of a subsidy, all the latest types of commercial vehicles are found in the trials. Probably without the public being aware of it, the army has a greater influence in determining design and development of commercial motors than has the private user. Yet the army makes very few direct purchases. It has the first call, however, by reason of the new models being presented to it for test and examination with a view to participation in the subsidy scheme. The army requirements have tended to standardize wheels and tires, bodies and body fittings; under clearance and track; they have made radiator protectors an essential, they have insisted on hooks front and rear for hauling purposes; they have cut down gasoline consumption and arrested oil wastage; and they have done more than the demands of the private user to develop accessibility.

This year's tests have just been brought to a close. They consisted of 1 month under observation, during which the competing vehicles had to make twenty distinct daily runs over routes radiating from Versailles, the total distance covered being 1,558 miles for ordinary trucks, and 1,225 miles when a trailer was hauled. The runs had to be made under full load, both singly and in convoy formation, without load, and with gasoline, benzol and alcohol as fuels, the army authorities evidently anticipating a shortage of the usual gasoline supply in time of war. An officer was carried as observer on every vehicle, and very careful control was kept of fuel and oil consumption, for it was on running economy, reliability and absence of wear that awards will be made which will entitle the

models to be classed as subsidized types. This year there were no failures on the road; but mere ability to cover the distance is not sufficient, and when the road portion of the trials was over a very close examination was made of the working parts. This was not a superficial look-over, but consisted of dismounting rear axles, jackshafts, gearboxes, road wheels, motors, steering gear, etc., at the will of the committee, not a single vehicle escaping without some important part being laid bare for inspection.

The French trucks taking part in the army trials really are representative of the national industry. This year, for instance, sixteen of the leading home firms entered their latest models, the total number of competing vehicles being sixty-two, representing thirty-two distinct models. Although the army stipulates the body sizes and insists on a certain ratio of dead weight to useful load, there is no decided preference for either the motor under the bonnet or the motor under the seat type. This year the bonneted type was in a slight majority, but while certain firms, Saurer at the head of them, claim that the motor should be in front of everything, such leaders as Renault, Berliet, de Dion-Bouton, Delahaye, and Bayard-Clement, build both types.

Small Size of Power Plants

From an American standpoint an important feature of the French trucks is the small size of the power plant. In every case four-cylinder motors were employed, but in only a few cases did the cylinder diameter exceed 4 inches. A very common dimension for 3 to 3½-ton trucks was a cylinder bore of 3 to 3½ inches. There is a tendency, too, to make one type of motor do duty in different chassis designed to carry loads varying from 2 to 3½ tons.

The explanation of the small motor can of course be found in the high cost of gasoline in France. Last year, in calculating running costs, the price of gasoline was taken at 33.3 cents per gallon. This year it is still higher. In motor design there is not any great departure from touring car practice, and except that a lower number of revolutions is aimed at the touring and the track models hardly differ. For the most part the motors are of the L-type, with fixed point high-tension ignition and either pressure-fed or circulating oil systems.

The unit system is not favored, being found on only two types: the Latil, which drive to the front wheels, and the new La Buire truck. The former is distinctive by

reason of a considerable use of bronze castings in place of aluminum, this latter metal being used only for such parts as timing gear housings, oil base, gearbox cover, etc. The Latil motor is a good example of the simplicity that is being aimed at by the French manufacturers. A single casting, with valves on one side, the intake, exhaust and water pipes were produced in the casting, and while the base for the magneto was produced with the crankchamber, there was a flange on one side of the cylinder casting through which was screwed a bolt with lock nut to bear on the top of the magneto and hold it down to its platform.

Specialists Furnish Carbureters

In the majority of cases the manufacturers apply to the specialists, such as Claudel, Zenith, G. & A., Solex, for their carbureters. The regulations stipulate that gasoline, benzol and alcohol shall be used without a change of carbureter. Practically no change is required to use benzol in the place of gasoline, but to properly vaporize alcohol a considerable amount of heat is required. For this purpose nearly all the carbureters are amply water-jacketed, with provision for turning on the flow of water only when required for running on alcohol. The results obtained are not the best, but as alcohol has no commercial use in France for internal combustion motors, the compromise is satisfactory. The rigorous control of lubricating oil and grease in these trials has led to considerable care being exercised to secure economy. Pressure feed to the main bearings and connecting rod ends and the pump-driven circulating system are about equal in numbers. But of equal importance with the actual lubricating system is the necessity of preventing leakages through the tappet guides, crankcase breathers, the ends of the bearings and the joints of the gearbox and rear axle.

Among the new mechanical features shown on the trucks was a special type of frame member employed on the Clement-Bayard chain-driven models. At the point where the jackshaft passed through the frame member, this latter was considerably increased in depth, the top line of the frame being straight, but the bottom line being given a considerable downward sweep. Thus the total depth of the frame member at this point was about three times that at any other point. Obviously this gave increased strength at the point of the frame receiving the bracket for the jackshaft bearings and the forward end of the rear spring. The frame was trussed, the truss rod passing around this down-

ward sweep of the frame of the chassis.

On these models the gearbox was mounted immediately behind the cone clutch, and a propeller shaft carried the drive to the jackshaft. The differential housing was practically of the same type as used on the firm's touring cars, and was bolted to a couple of transverse frame members, one in front of it and one to the rear of it. Unlike some of the smaller models, where the jackshaft was practically of the same design as a touring car rear axle, there was no casing for the two portions of the transverse shaft. Each shaft carried near its outer extremity a brake drum lodged within the face of the frame member, the increased depth at this point making this possible. On some of the other models, notably Delahaye and Peugeot, brakes were fitted at this point, but in both cases the drum was on the outside of the frame, or between the sprocket and the frame. On the Clement-Bayards, with a view to giving accessibility to the brakes, there was a coupling on each half of the jackshaft. All the Clement-Bayards were fitted with pressed steel road wheels, this being a type of wheel which up to the present has not been considerably adopted in France. During the trials it gave very satisfactory service.

La Buire Tries New Truck

La Buire had in the trials a new 2½-ton model, shaft-driven, with canted rear wheels. Unit construction was adopted for the motor and gearbox, the crank-chamber having a rearward extension which encircled the disk clutch and had bolted to it the four-speed gearbox. On an extension of the propeller shaft, to the rear of the axle, the foot-operated brake was mounted, the hand brakes being in the usual position on the road wheels. A double reduction was employed in the rear axle; this consisted of two spur pinions, one of which was mounted on the same shaft as the crown bevel wheel, and the other on the differential shaft.

In principle, though not in the same detail, this has been adopted by several other French firms for both touring and commercial models. These trucks were also fitted with oscillating hubs for the steering wheels. This invention, while giving perfect lateral stability, allowed the wheel to articulate in a vertical plane. It consisted of a central hub with the wheel revolving on a centrally located pin attached in the usual position, but being mounted on the stub axle below the main journal. The result is that the weight of the vehicle is carried by the wheel below the main journal, leaving the wheel free to articulate in a vertical plane about this lower suspension.

Oscillating Hubs Used

Briefly, the construction of the wheel consists of a steel hub pierced in its center for the passage of an axle pin. The spokes are mounted on this hub in the usual way, and in the interior of the hub is a single steel plate bored to provide two distinct bearings; the upper one is the axis of rotation; the lower one receives the stub axle and is the axis of oscillation. The wheel, which is the invention of M. Genillon, appeared to give satisfactory service in the trials. The usual type of muffler was not fitted on the La Buire cars. In its place there was a long, big diameter pipe—probably 3 inches in diameter—attached just below and slightly within the frame number, and terminating in a small diameter pipe discharging at the rear.

Saurer competed with a shaft-driven model, the vehicle being a new 2-ton truck, but all the larger types were retained with side chains. Shaft-drive was in a decided minority, the firms adopting it being Schneider, who builds most of the Paris omnibuses; de Dion-Bouton; La Buire, Berliet for one model only, and Renault. This latter firm has a distinctive construction with one-piece forged rear axle having a central cradle into which the differential housing is received. The method of driving is distinctive. At the

end of the propeller shaft a bevel pinion meshes with a crown bevel wheel carrying on its shaft a spur pinion engaging with a larger spur pinion on the end of the left-hand axle shaft. On the continuation of the propeller shaft, to the rear of the differential, there is a second bevel pinion meshing with another crown bevel wheel, also carrying on its shaft a spur pinion in engagement with a larger pinion mounted on the extremity of the right-hand axle shaft. Obviously, the two extremities of the forged axle are bored out to receive the drive shafts. Instead of the usual type of spring shackle, Renault made use of a sliding block, consisting of a hanger bolted to the lower side of the frame member and having two grooved into which the sliding piece mounted on the shackle bolt was received.

Serious attempts have been made by French manufacturers to abolish the use of rubber for commercial vehicles, and in the army competition the use of steel rims gives a decided advantage, for the cost of the wear and tear of tires is estimated by the jury, and this cost must always be lower for steel than for rubber bandages. Steel-shod wheels, however, were present in smaller numbers than usual, and no vehicle came successfully through the trials with steel rims on all four wheels. In a number of cases the front wheels were shod with rubber and the rear ones fitted with steel bandages, Delahaye, Berliet and Latil adopting this combination. This latter firm having the entire power plant over the front axle, there being no mechanism to the rear of the driver's seat, was fully justified in employing steel-shod wheels at the rear. But in other cases the results were not satisfactory.

Temptation to Speed

When running without load the temptation was to speed, with the result that the vehicles danced about on the road, play set up in the spokes of the wheels and the mechanism suffered. Wheels are still the weakest point of the trucks, many having had to be patched up on the road in order to complete the test. In a few cases tires gave way, breaking up completely and having to be changed. Spare rubber bandages had to be carried, their weight being considered as useful load, whereas all other spares were weighed in with the empty vehicle, but as in most cases it was not possible to fit them without the use of a hydraulic press it was difficult to see their utility aboard. Torrihon had a system by which it was claimed that bandages could be changed on the road, consisting of a detachable rim with studs on its inner face passing into grooves on the fixed rim. The same firm had also a quick detachable arrangement consisting of a U-section fixed rim on which the ordinary rubber bandage was mounted and secured in position by means of four circular section rings—two on each side—levered into position in much the same way as a pneumatic tire is levered over its rim.

OFFICIAL OPERATING COSTS OF FRENCH TRUCKS HAVING QUALIFIED IN 1911 ARMY TRIALS UNDER THE SUBSIDY SCHEME

The cost of operating was based on fuel at the following prices:

Lubricating oil			58½	cents	per	gallon
Grease			8½	cents	per	pound
Gasoline			33 3/10	cents	per	gallon
Benzol			22½	cents	per	gallon
Alcohol			36	cents	per	gallon
	Distance in miles	Weight empty pounds	Total weight pounds	Useful load pounds	Cost per mille car in cents	Cost per ton mille in cents
De Dion Bouton truck.....	1,569	6,856	14,528	7,672	3.15	.0090
Malicet & Blin truck.....	1,569	6,767	11,971	5,204	4.36	.0187
Aries truck	1,569	7,341	15,057	7,716	4.80	.0187
Renault truck	1,569	6,900	13,227	6,326	3.85	.0134
Detrich truck	1,569	7,363	13,778	6,415	4.52	.0155
Delahaye truck	1,569	5,665	10,934	5,268	0.23	.0096
Delaugere-Clayette truck....	1,569	6,778	12,543	5,784	4.17	.0159
Berliet truck	1,569	5,676	10,163	4,596	0.24	.0115
Vermorel truck	1,569	6,800	12,984	6,183	4.17	.0149
Front-drive Latil truck.....	1,569	7,259	14,440	7,179	3.77	.0115
Peugeot truck	1,569	6,194	11,353	5,158	0.23	.0096
Clement-Bayard truck	1,569	5,798	11,397	5,559	0.28	.0109
Saurer tractor	1,255	8,598	15,211	6,613	6.42	.0062
Aries tractor	1,255	12,147	17,526	15,432	12.42	.0127
				15,432		

About three-quarters of distance was covered under full load, and one-quarter empty. No account is taken of tire wear.

Routes and Touring Information



SCENE NEAR MANHATTAN, KAS., KANSAS RIVER IN THE DISTANCE

LONG TRIP PLANNED

ST. LOUIS, Mo.—Editor Motor Age—I have just bought a motor car and wish to make a trip from St. Louis to southern California and thence up through southern California, Oregon and Washington; thence back east again along the states bordering on Canada.—J. C. Dalrymple.

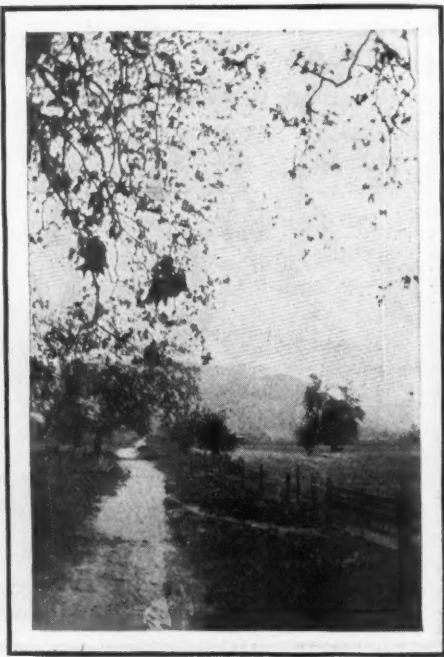
You have outlined an ambitious trip, but it will take you to so much that is splendid and through so great a variety of scene and circumstance that even any surprises in becoming acquainted with a new car, it would seem, might become insignificant incidents. As the most southern route probably would not be as pleasant at this season of the year as at some others, it is suggested that you begin your journey by running along beside the Father of Waters through St. Charles, Wentzville, Troy and Louisiana to Hannibal. Crossing the river into Quincy you will proceed into Illinois until opposite Fort Madison when you will re-cross the Mississippi into Iowa. A branch of the Blue Grass road with its blue and white markings will be your guide through Houghton and Stockport, reaching the main line of this thoroughfare a few miles east of Fairfield. You will follow the blue and white striped poles entirely across the state of Iowa, touching enroute the following towns: Ottumwa, Albia, Russell, Osceola, Murray, Afton, Creston, Corning, Villisca, Red

Oak, Hastings, Glenwood and Council Bluffs.

Crossing into Omaha you will no longer look for the blue and white stripes, but in their stead will be found bands of yellow and black indicating the Platte valley route. As its name indicates, it lies along

the Platte river and follows closely the overland route of the by-gone days of prairie schooners. It has much, therefore, of interest historically. The principal towns reached in Nebraska are Waterloo, Fremont, Schuyler, Columbus, Clarks, Central City, Grand Island, Wood River, Kearney, Elm Creek, Lexington, Willow Island, Gothenburg, Maxwell, North Platte, Paxton, Ogalalla and Brule.

Swinging down into Colorado, one stop is made in this state, Julesburg; returning into Nebraska, Chappell, Sidney, Kimball and Bushnell are reached before coming to Wyoming. The first town in this state is Pine Bluffs, then Egbert P. O., Burns and Cheyenne. Pass Granite Canyon P. O., Tie Siding and Red Buttes Station to Laramie; thence on through Bosler Springs, Medicine Bow, Hanna, Fort Steel, Rawlins, Wamsutter, Red Desert Station, Bitter Creek, Black Buttes, Rock Springs, Green River, Bryan Station, Granger, Liman, Ft. Bridger, Dog Springs, Spring Valley and Evanston. Soon crossing the state line into Utah your way will be through Castle Rock, Coalville, Gorgoza Station, to Salt Lake City. We presume a visit to this city is included in your itinerary. However, at Echo Station, 35 miles from Evanston, you have an option of running through Peterson and South Weber directly to Ogden. Running north from Ogden, at Brigham City it is well to



ON MONSERRAT RANCH, CALIFORNIA



IN PT. DEFIANCE PARK, TACOMA, WASH.

provide a generous supply of gasoline, as, after passing this point, it may be difficult to procure. Corrinne, Tremonton, Snowville, Curlew, Kelton, Lucin and Montello are remaining wayside points in Utah.

In Nevada you will touch enroute Tecoma, Cobre, Wells, Elko: 33 miles beyond Elko passing Hylton & Hanna stores, and farther on Sadler's Ranch before you reach Eureka. Thence through Austin, West Gate, Sand Springs, Fallon, Leetville, Hazen Station, Wadsworth and Sparks to Reno. You will fairly sense when you have crossed the state line of California, for the barrenness of the desert, with a certain wierd beauty, is left behind and the land of growing things is reached. You will go up through Truckee, past Donner and Van Norden lakes to Emigrant Gap, and, having topped the Sierras, you will come down through Alta, Colfax, past Lake Arthur to Auburn, Folsom and Sacramento. A most delightful optional route from Reno to Sacramento is through Steamboat Springs, Carson City, Meyers Station, Kyburn, Pacific, Placerville, Clarksville, Mills and Sacramento. Fifteen miles beyond Carson City, taking the fork to the right to Lake Tahoe, a barge will ferry cars to Tahoe Tavern. Lake Tahoe is one of the most beautiful spots in a section noted for its beauty.

The run from Sacramento will be made through Galt, Lodi, Stockton, French Camp, Banta, Livermore and Dublin to Oakland, where from the Mole you will be ferried to San Francisco.

For the journey down the coast on El Camino Real you should pass through Colma, South San Francisco, San Mateo, Redwood, Santa Clara, San Jose, Los

Gatos, Soquel, Salinas, Soledad, Jolon, San Miguel, Paso Robles, San Luis Obispo, Arroyo Grande, Los Cruces, Santa Barbara, Ventura, Hollywood, Los Angeles, Santa Ana, San Juan Capistrano, Ocean-side, Del Mar to San Diego. The Imperial valley and its transformation by irrigation from a desert to a garden may be seen by a run through Devil's canyon, almost on the Mexican border, El Centro, Brawley, Mecca and Beaumont, returning to Los Angeles by way of San Bernardino. Sand will be encountered in places on this run, particularly between Brawley and Beaumont.

A route which would be less strenuous would be through El Cajon, Lakeside, Bernardo, Escondido, Bonsal, Temecula, Elsinore, Perris, Riverside, Cucamonga, Monrovia, Pasadena to Los Angeles.

To return north you can either retrace the coast route, or, going by way of the valley of the San Joaquin river through Mojave, Bakersfield, Tulare, Fresno, Merced, Modesto and Livermore to San Francisco.

For the northern branch of your journey on the coast, after ferrying from San Francisco to Vallejo, some rough roads will be found as well as excellent stretches before reaching Puget Sound. The itinerary on this portion of the Pacific highway is as follows: Sacramento, Tehama, Redding, Kennett, Delta, Castella, Dunsmuir, Ashland, Grant's Pass, Roseburg, Cottage Grove, Eugene to Portland; and after leaving the City of Roses, the way will lie through Vancouver, LaCenter, Kalama, Castle Rock, Chehalis, Centralia, Grand Mound, Tenio, Tacoma to Seattle.

From Seattle to Spokane is a vigorous ride, and cars are sometimes shipped. However, towns enroute, after ferrying across Lake Washington to Kirkland, are

Snoqualmie, Cle Elum, Ellensburg, Malaga, Wenatchee, Douglas, Coulee City, Creston, Davenport, Spokane. Very recent word from Helena advises the following route is now open between Spokane and that place. By state road following the Northern Pacific Railway to Murray, Idaho; thence to Thompson, and again following the Northern Pacific to Missoula and Blackfoot valley to Bonner, Clearwater, Ovando, Lincoln, Flesher; thence via Wilber and Silver to Helena.

Heading to the northeast from Helena to Great Falls you will follow the Bird Tail Divide; thence through Benton, Havre, Chinook, Harlem, Malta, Saco, Hinsdale, Glasgow, Nashua, Wolf Point, Poplar, Culbertson, Buford, Williston, White, Earth, Berthold and Minot across the wide, rolling country of the north; thence to Minneapolis via Dogden, Turtle Lake, Canfield, Bismark, Jamestown, Casselton, Wahpeton, Fergus Falls, Alexandria, Sauk Centre, St. Cloud and Anoka. Leaving the Twin Cities, pass through Farmington, Faribault, Owatonna, Blooming Prairie, Austin, St. Ansgar, Osage, Charles City, Janesville to Waterloo; Vinton, Cedar Rapids, Mechanicsville, Clarence, Bennett, Maysville, Davenport, Muscatine, Grand View, Wapello and Burlington to Fort Madison, from which point the route will be familiar, having passed over it on the first part of your trip.

Digressions for the purpose of visiting national parks may be made from Merced, Cal., to Yosemite; from Tacoma, Wash., to Mt. Ranier; from Ravalli, Mont., to Glacier; and from Helena to the Yellowstone.

EVANSVILLE TO EAU CLAIRE

Evansville, Ind.—Editor Motor Age—I would like a route from Evansville, Ind., to Durand, Wis., via Chicago, Milwaukee,



PALA MISSION, PALA, CAL., ON THE EL CAMINO REAL



TRANSCONTINENTAL ROUTE SIGN ERECTED BY TOWN OF TREMONTON, UTAH

Oshkosh, Stevens Point, and Eau Claire.—A Subscriber.

The distance from Evansville to Chicago, via La Fayette, is 334.6 miles, passing the following cities: Evansville, Warrenton, Princeton, Patoka, Hazleton, St. Thomas, Vincennes, over good gravel and macadam roads practically all the way; Bruceville, Oaktown, Carlisle, Paxton, Sullivan, Terre Haute, Mecca, Rockville, Guion Station, Waveland, Crawfordsville, La Fayette, Montmorenci, Wolcott, Remington, Rensselaer, Aix, Virgie, Thayer, Shelby, Crown Point, Schererville, Highlands, Hessville, Grasselli Station, East Chicago, Whiting, South Chicago, Chicago. The road is good gravel practically the entire distance. Complete running directions, Lafayette to Chicago, with map, appeared in Motor Age, May 16, 1912, issue, pages 22 and 23.

There are two routes from Chicago to Milwaukee, one known as the shore route, the other as the inland. If a fast trip is desired the latter would be the one to take under ordinary weather conditions. The shore route over macadam two-thirds of the way—which, by the way, is not in the pink of condition—is as follows: Chicago, Evanston, Wilmette, Kenilworth, Glencoe, Hubbards Hill, Ravinia Park, Highland Park, Lake Forest, Waukegan, Kenosha, Racine, South Milwaukee, Milwaukee, 89.4 miles.

The inland route, 94.9 miles, takes you through small towns only: Chicago, Evanston, Wilmette, Grosse Point, Northfield, Deerfield, Everett Station, Sylvania, Kilburnville, Milwaukee.

Milwaukee to Oshkosh through Fond du Lac is over good gravel road through a fine rolling country, and the towns en route are: Milwaukee, Menominee Falls, Meeker, Schleisingerville, Theresa, Fond du Lac; from this point following the shore route to Oshkosh.

It is about 79 miles to Stevens Points, the road as far as Fremont being a good gravel one; between Amherst and Stevens

Point you will encounter gravel stretches and sandy spots. Leaving Oshkosh go through Medina, Dale, Redfield, Fremont, Weyauwega, Waupaca, Amherst, Stevens Point.

Continuing in a northwesterly and westerly direction with Eau Claire your destination, you will find a well-travelled road all the way, with perhaps one or two short bad stretches. The towns on this road are: Junction City, Milladore Station, Auburndale, Marshfield, Mannville, Spokeville, Greenwood, Withee, Stanley, Cadott, Anson, Chippewa Falls, Eau Claire.

LAKE MICHIGAN TO THE MISSISSIPPI

Chicago—Editor Motor Age—Will Motor Age please give me the best route between Chicago and St. Louis, and the condition of the roads at the present time.—Tourist.

A very interesting trip may be made from Chicago to St. Louis by going south-

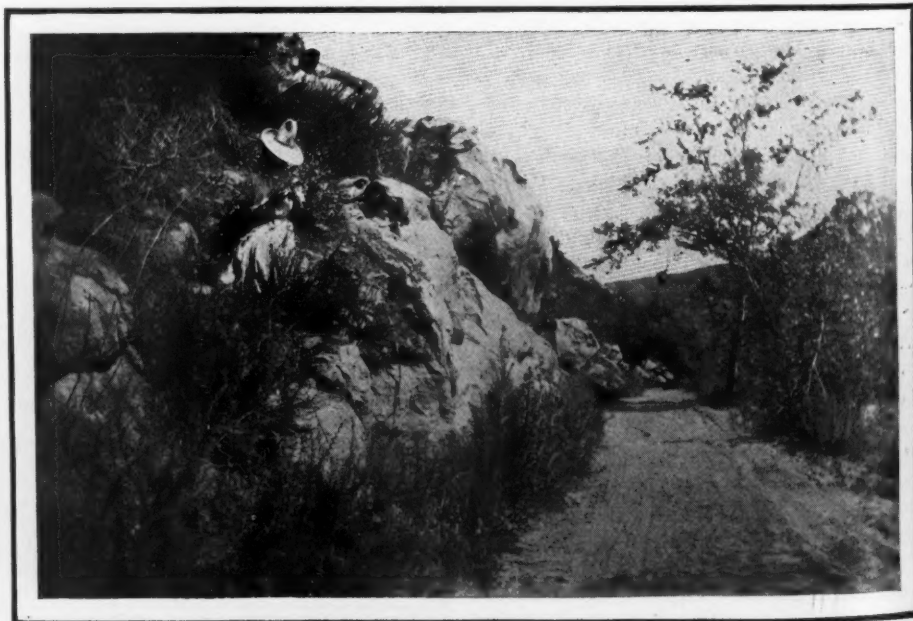
west from the Windy City through La-Grange, following the canal to Joliet, then on through Minooka, Morris, Marseilles and Ottawa. Fairly good macadam and gravel will be found all the way to Morris. Some dirt roads will be found between Morris and Ottawa. About 15 miles beyond the last named place, Starved Rock, that strategic point in the Indian historic annals of the Middle West, may be seen; and a few miles farther on is Deer Park. LaSalle, Peru and Hollowayville are reached in the order mentioned; then turning to the south pass through Bureau Junction and Putnam to Henry. From here to Chillicothe, a distance of about 9 miles, dirt road will again be found, and 20 miles more will bring you to Peoria.

Fair to good natural dirt roads, most of them kept in excellent shape, will continue to Quincy through the following towns: Farmington, Prairie City, Bushnell, Macomb, Colchester, Tennessee, Plymouth, Augusta, Loraine and Ursa. Running south from Quincy to Hannibal on gravel nearly all the way, cross the Mississippi river at the latter point and continue down the valley through New London, Frankford, Louisiana, Prairieville, Troy, Flint, Wentzville and St. Charles to St. Louis.

KANSAS TO WESTERN TEXAS

Girard, Kansas—Editor Motor Age—Kindly give me the best route from Girard, Kansas, to Amarillo, Texas. I am particularly desirous of knowing the points at which to cross by bridge the Cimarron, Canadian and Beaver rivers; also to evade deep sand and treacherous fords of any streams where quicksand is to be found. We wish to start as soon as possible in our American Tourist car.—Marion Coulter.

Volume 4 of the Blue Book will give you complete running directions for the entire distance, also many side trips.



ROCK ROAD TO PALA MISSION AND RESERVATION

After motoring to Chanute, turn north through Humboldt, Iola, Colony, Garnett, and Richmond to Ottawa. This takes you a round about way but at Ottawa you strike the Santa Fe trail, providing a good road through to Newton via Williamsburg, Waverly, Emporia, Cottonwood Falls, Elmdale, Clements, Florence and Peabody.

The next section of the trip will be south over the Meridian highway and the more important places enroute are Wichita, Wellington, South Haven, Caldwell, Renfrow, Medford, Kremlin, Enid, Hennessey, Dover, Kingfisher and El Reno. South of El Reno 11½ miles the Canadian river is crossed; but good facilities are furnished for this crossing as well as that of the Cimarron river between Dover and Kingfisher, as the Meridian highway is the main travelled north and south thoroughfare in this section. Continue on through Pocasset, Chickasha, Verden, Anardarko, Apache, Lawton, Emerson, Randlett, Burkburnett, Wichita Falls, Windthorst and Jacksboro to Weatherford. The Red river is crossed on a toll bridge between Randlett and Burkburnett.

At Weatherford you will leave the Meridian highway, turning west and going through Mineral Wells, Breckenridge, Albany, Abilene, Sweetwater, Snyder, Post, Slaton, Lubbock, Hale Center, Plainview, Tulla, Happy and Canyon to Amarillo. You may have some rough travel and sand between Weatherford and Sweetwater. At the latter place you will strike the through route from San Angelo to Amarillo, and the remainder of the trip will be over good road. This is the longer way by which to reach Amarillo, but it is the better road.

GOING TO CRIPPLE CREEK

Tyler, Texas—Editor Motor Age—I am contemplating a trip to Cripple Creek, Colo., and would like the best motor car



SEATTLE BOULEVARD OVERLOOKING LAKE WASHINGTON

route from Corsicana, Texas, to the point mentioned or to Colorado Springs. Kindly give road conditions, sand, etc.—I. H. Crutcher, Jr.

Motoring through Ennis, Waxahachie, Midlothian, Mansfield and Kennedale to Fort Worth you will there take the Meridian highway following it north as outlined and mapped in last week's issue of Motor Age under directions to the party going from Corpus Christi, Texas, to Denver, Colo.

From Colorado Springs to Cripple Creek your route will be via Manitou, Cascade, Green Mountain Falls, Crystola, Divide and Midland. You should have no difficulty in making this trip as it is over a route traversed by many.

AMARILLO TO SAN ANGELO

San Antonio, Tex.—Editor Motor Age—In Motor Age of July 11, page 22, "Route Through Texas," you advised W. C. Wright, of Saint Francis, Texas, that he had the choice of two roads from Amarillo to Rule, but there are drawbacks to both. The one to Plainview, Lub-

bock, etc., takes him through the extensive prairies, over cattle trails, and sometimes not even that to guide you. This is a sad mistake, as the road from Amarillo, Plainview, and Lubbock is as fine a country road as you ever saw. You can make this entire trip from Amarillo by way of Plainview, Lubbock, to San Angelo, almost without changing your gears, there being only one or two places that you will have to change, and that is not for want of road by any means, but one or two short, steep hills.

This road is part of the San Antonio-Denver highway, and I am glad to state that with the exception of about 30 miles in the western part of Kerr, and eastern part of Kimble county, we have a very fast road the entire distance from San Antonio to Amarillo, and not only that, but the road is good from Amarillo to Trinidad, with exception of possibly 30 or 35 miles that has not been repaired and may be a little rough, but no sand; and from San Antonio to Alice, we have a fairly good road, there being some sand in Wilson and Bee counties, but not considered bad by any means, there being an average of fifteen to twenty cars per day going over this road between San Antonio and Corpus Christi that keeps the road in splendid condition for automobiles.

On page 24, "Ask for Texas Route," you tell C. H. Lewis, cattle trails are the style of roads he will have to San Antonio. This, of course, is a sad mistake, as he will intersect the San Antonio-Denver highway at San Angelo, and have the road as stated in the case to San Antonio, and also to Rockport, with a fine road from Beeville to Rockport, with some sand in Bee and Wilson counties as stated in the other case.

Motor Age also stated that he would go through New Braunfels out of San Antonio. This is a mistake, as New Braunfels is 32 miles north of San Antonio. He will go through Elmendorf instead of New Braunfels and the balance of your towns are correct.—D. E. Colp, Secretary Chamber of Commerce.



MONSERRAT, SAN DIEGO CO., CAL.

Cannot Use Ball Thrust Excessive Wear on Axle Bushings Cannot be Prevented With Ball-Bearing

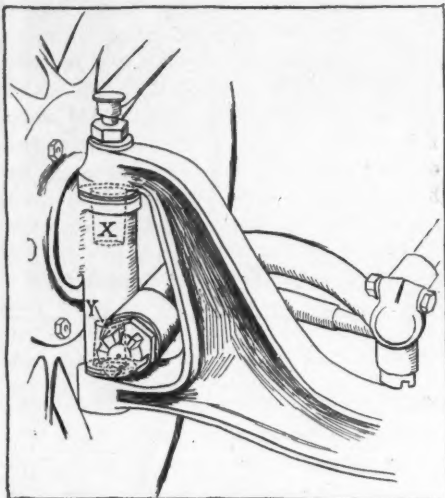
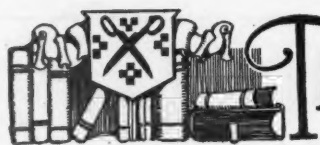


FIG. 1—WEARING POINTS ON TIMKEN AXLE

PORT GIBSON, Miss.—Editor Motor Age—
—I have a touring car with a Timken front axle, very similar to the cut, Fig. 1. I have trouble with the bushings at places marked X and Y, where the king-bolt goes through them. Also there is some wear on the top of the knuckle where it bears on the axle yoke. After replacing these bushings, the car steers very easily until the bushings wear down, when steering is very hard, and the wheels spraddle out some. What would be the opinion of Motor Age of placing a ball thrust bearing in above the steering knuckle where it bears on the axle yoke? Would the balls stand the pressure and jarring over rough roads? I have a plain washer there now that is about 1/4 inch thick. I would install new bushings at the same time.—L. Briscoe Allen.

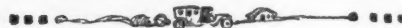
1—The Timken axle you use probably is an old-style, with the straight king-bolt, which wears faster than the improved taper king-bolts with which the newer types are equipped. With plenty of grease in the grease cups, and provided that the car is not too heavy for this size of axle, this axle should stand up for a reasonable length of time notwithstanding, unless used on very sandy roads.

It is quite impractical for you to attempt to insert a ball bearing in the Timken front axle you are using, for the reason that you have not sufficient room to accommodate a ball thrust bearing of adequate dimensions. You have not sufficient stock to make room, and to attempt to use a bearing with balls of insufficient size would be worse than useless. The bushings referred to are hardened steel and inexpensive, and it is suggested that you replace them as worn, being especially attentive to proper lubrication. There are no washers on reg-



The Readers'

Axle Bearings Cannot be Supplemented With Thrust Type
—Patriotic Belvidere Scores Rockford Press—How
Crude Rubber Is Prepared for General Market



Sets Belvidere Right Rockford Motorist Mistakes Archi- tectural Difficulties for Freak Ordinance

BELVIDERE, Ill.—Editor Motor Age—
On page 47, Motor Age, July 18, under the caption, "Belvidere's Queer Ordinance," the statement is made that Belvidere has an ordinance which prohibits the driver of a car taking his car out of a garage onto a public street, etc. The story of this alleged ordinance is pure fiction. It originated in a Rockford newspaper, through the experience of a Rockford motorist who, finding that such a rule applied to one garage into which he had driven his car, came to the erroneous conclusion the Belvidere had established such local regulations by ordinance.

The garage in question is located on the main business street at a point where the sidewalk is 3 feet or more above the asphalt pavement. A crossing for pedestrians, which is necessarily built from the street on a sharp grade, is located directly in front of the entrance to the garage. Because of the location of this crossing and the consequent danger of accident in cases of cars being backed out by careless or inexperienced drivers, the proprietor of the garage agreed to use the crossing as an entrance only, when making application for his permit from the city council. The rule is not ironclad and is intended for the rush hours only.

OLDS SPEED, WEIGHT, AND ECONOMY

Battleford, Sask.—Editor Motor Age—
What is the average fuel mileage per gallon on the Olds Limited six-cylinder car?

2—What is the weight of this car fully equipped?

3—What is the maximum speed of this car?—E. S. B.

1—The average fuel mileage of the 1910 Oldsmobile Limited was about 10 miles per gallon; of the 1911, model 6, and of the 1912, 7.

2—The weight of the Limited is between 4,200 and 4,800 pounds, according to the model and the type of body.

3—These cars have made 68 miles per hour, it is claimed.

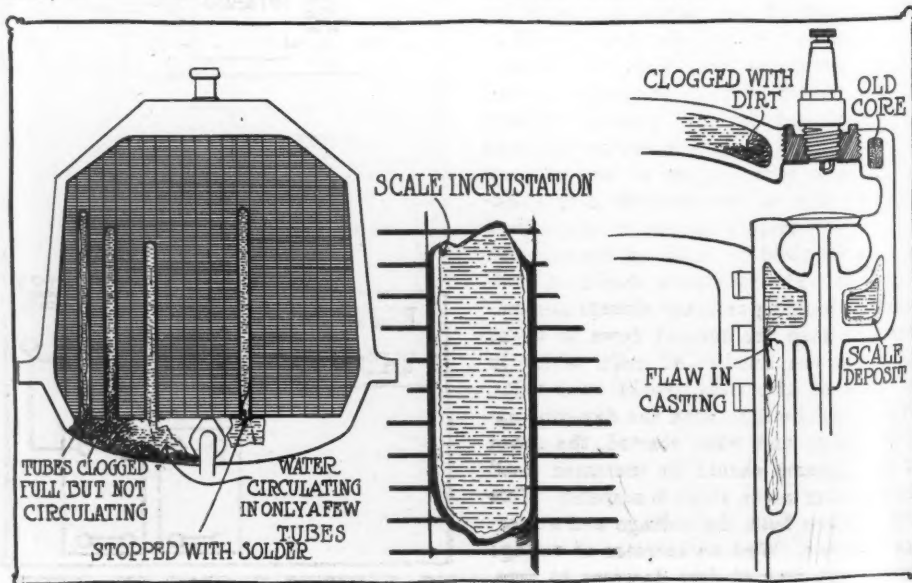


FIG. 2—POSSIBLE CAUSES OF BUICK OVERHEATING

Clearing House



Causes of Overheating of Motor Are Legion—How to Charge Batteries with Direct Current Generator—Distinction Between Steering Types Explained—Grease Not for Valves

Charging With Exciter Diagram of Wiring for Battery Charging With Direct- Current Dynamo

MIDDLETOWN, Pa.—Editor Motor Age.—Please give wiring diagram and instructions to charge storage battery from direct-current exciter.—Reader.

1—The source of current, provided it be uniform and of direct current, matters very little in charging a storage battery. The wiring should be as shown in Fig. 3. An ammeter of from 10 to 15 amperes capacity should be used, and a voltmeter of from 10 to 30 volts, wired as shown. Three types of resistance may be employed, water resistance, which consists of an open tank of water with two wires hanging from wooden supports, immersed, the resistance of which type depends upon the distance between the wire ends; lamp resistance, which consists of a bank of incandescent bulbs wired in parallel, the resistance depending upon the size and number of lamps used; and a rheostat, or metallic resistance, which is adjustable by means of a lever or crank. The latter is the most convenient, also the most expensive. For a small plant the electric lights will serve the purpose equally well, and are cheap. The first method will do for temporary jobs, and possesses the virtue of extreme economy.

The resistance, once determined as to type, will have to be graded according to the strength of the current generated by the dynamo. It will be found, with a direct-current exciter, that the voltage will be rather high in proportion to the amperage, and for this reason, charging with this type of current source will take longer than with the use of the ordinary type, as, due to the relatively slow velocity of a low-ampere current, a longer time will be required to build up the required amperage. The resistance should be sufficient in charging ordinary storage accumulators to step the current down to about 2.5 times the number of cells, which in the case of two cells, would be 5 volts. This should be done with the dynamo running slowly, and when started, the speed of the dynamo should be increased until the ammeter reads about 3 amperes. This will increase both the voltage and amperage together. With an increase of voltage the current may at first decrease to zero, and then increase. If no change in the

speed of the exciter is possible, the same effect may be secured by manipulating the adjustments of resistance.

The voltage will now increase, its rate of increase being indicated on the voltmeter. It should be allowed to increase to 2½ volts per cell, when either the resistance should be increased or the speed of the dynamo decreased to show an amperage of 1, at which current the voltage should again climb to 2.5 per cell, and the battery will be fully charged.

DO NOT GREASE VALVES

Marinette, Wis.—Editor Motor Age—I have a car which has the valves inclosed same as on the Kissell six. Would it do any damage if I put fibre grease in around the valves and would there be any danger of the grease getting under the valve seat? I have heard the Packard does this. Is it true?—H. E. S.

The lubrication of the valves is well provided for in any well designed motor, and sponge grease put about the valves in the manner you suggest would be quite likely to get on the seats and carbonize and gum the valves. The Kissell company advises strongly against such practice, as worse than useless. The Packard company has never advised the use of fiber grease on its inclosed valves. Follow the advice of the manufacturer in this regard, as given in the instruction book.

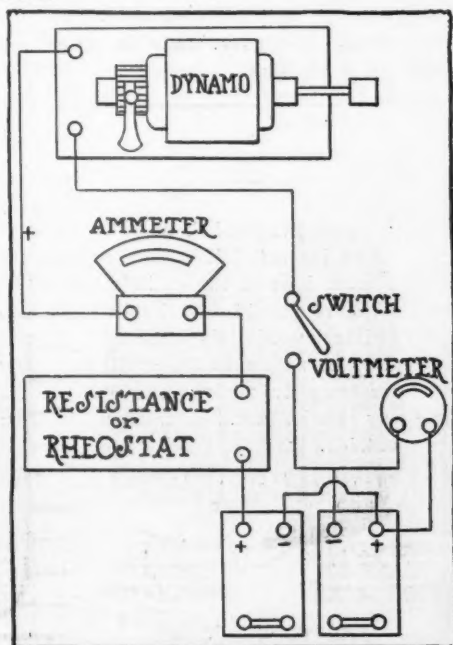


FIG. 3—WIRING DIAGRAM FOR DIRECT CURRENT CHARGING

Buick Cooling Troubles Motor Overheats With Full Radiator — Holds Repaired Radiator Blameless

CINCINNATI, O.—Editor Motor Age—I have a model 14 Buick runabout, which was purchased new in this city in October, 1910, and the original owner claims not to have run it to exceed 200 miles. I bought it in June, 1911. It is a two-cylinder, opposed motor. To date the car has not been run to exceed 1,000 or 1,200 miles. The trouble is it heats the water excessively, using about 1 gallon to 7 or 8 miles. Have had it overhauled by several and they pronounce it to be in good working order; has good power and it performs satisfactorily, only uses too much water. It has a thermo-syphon system of cooling.

Recently I had a pump installed, but this does not lessen the consumption and heating of water. Have had new 1¼-inch hose put in the circulating system and thoroughly traced water course for any stoppage, but none to be found. Seems to boil the water in the jackets like when water is poured on a hot stove. The original radiator was somewhat battered on the inside by the fan wheel getting loose, and I had the radiator reconstructed so as to hold about a gallon more water. It heats as much now as with the original one. So I do not think it is in the radiator as it got just as steaming hot before I had any change made thereon. Have had the timing changed, which has helped the speed and power at least 25 per cent. Use plenty of lubrication but this does not seem to help any.

The maker claims it is all in the radiator, but I do not think so, as the original one heated the same. Would like to hear from any one who can suggest a remedy for this trouble. Have tried a dozen or more suggestions but with no results. What does Motor Age think is the cause? There is no stoppage in the water circulation; carburetor works well and no misfires; everything else is all right.—A. W. Snyder.

The Buick Model 14 uses a vertical-tube radiator, in which the water runs simultaneously through all tubes. If your radiator ever worked properly, a repair such as you speak of could not increase its capacity by a gallon. It may be, however, that prior to the accident a part of the radiator, a tube or two, was closed, and when the radiator was repaired, was opened up. The water capacity of this cooling system is 2½ gallons, and if it does not hold this much, is radically wrong. It may be possible that while your system is up to normal capacity, the water does not circulate properly, due to an obstruction in the line, perhaps in the cylinder passages. Continued use of hard water may have deposited a scale in the interior of the



FIG. 4—GATHERING RUBBER LATEX IN THE AMAZON VALLEY

radiator that prevents proper radiation. To determine which of these is the case, or if none of them, what the real difficulty is, proceed as follows, always remembering that it is not a fault in design and therefore the result of an abnormal condition. Model 14 Buicks are usually well-cooled cars.

First drain out your radiator and cooling system, refilling it with clean water. Measure the amount that you put in, and if it is not as much as $2\frac{1}{2}$ gallons, you may know that your system is not of normal capacity, due either to stoppages in repairing the radiator, or core sand or deposit from dirty or alkali water. When the radiator is full start your motor, and let it run until the water is hot, then feel all of the tubes in the radiator. If any of them are cool, they are not circulating, and are probably clogged or closed through an error in manufacture or repair, although they may be filled with still water. Next, to test the circulation, disconnect the outlet hose, and with the motor running, run fresh water into the radiator to take the place of the water running from the disconnected exhaust. Drop some aniline color or ink into the radiator, watching the outlet to determine how long it will take it to run through the system. If it comes through greatly diluted, and continues to come long after the last is put into the radiator, there is an obstruction in the passages which allows the water to pass only very slowly, and may be due to caked core sand and scale, or vegetable matter or sand in the water, introduced into the circulation by careless straining of

the water. It is barely possible that a lump of iron was left by the core in casting that escaped the notice of the inspectors when tested before sale.

If, after all of these tests, it is found that the cooling system accommodates its full capacity of fluid, that it reaches every surface of the radiator, and that the circulation is rapid and thorough, your overheating must be due to errors in driving, to-wit, running on retarded spark, in low gear, or with an overrich mixture, or to a deposit of scale on the interior of the radiating surfaces, which prevents proper radiation. If the former, the remedy is obvious, if the latter, the system should be cleaned with one of the numerous radiator cleaning compounds, which have been described in *Motor Age* in recent issues.

If it is found that the water is not circulating through all of the radiator tubes, the radiator should be thoroughly cleaned and overhauled, and the ends of the tubes inspected if possible. If there are obstructions in the cylinder passages, their nature should first be learned, and if possible immediately removed. If it is found to be a flaw in the casting, it may be necessary to replace the cylinder, if no way can be found of reaching it from the outside.

Fig. 2, illustrates three conditions that might also cause your trouble. Overheating is also caused by an over rich mixture. This, while elementary, is none the less a frequent cause of such trouble, and no motorist can afford not to consider it. Late spark timing or running on a retarded spark is another frequent cause of

overheating. Low gear running is a cause of overheating that need not be mentioned. Cooling troubles are nearly always the result of specific derangements peculiar to the car.

STEERING GEAR DIFFERENCES

Portland, Ore.—Editor *Motor Age*—To settle an argument please give the definition of an irreversible steering apparatus as applied to a motor car? What kind has the Cadillac?—Phillip Van Der Kar.

An irreversible steering gear is a device that permits the wheels of a vehicle to be turned by means of a suitable hand wheel or lever, but which restricts their movement to that which is caused by such control. With its use, ruts or obstructions in the road can have no effect on the direction of the wheels. The non-irreversible steering gear allows control over the wheels by a wheel or lever in the same manner as the irreversible type, but is not immune to the action of the surface irregularities of the road. Steering gears may be tested as to irreversibility by jacking up the front wheels and kicking sideways the front or rear portion of one of the tires. If the steering wheel turns, the gear is not irreversible, but if no amount of pressure on the road wheels can turn the hand wheel, the gear is irreversible. The identity of a given gear as to type also may be determined by examination of its mechanism. There are three general types of non-irreversible types of steering gears, the rack and pinion, which is now used only on some of the lower priced commercial cars, the pinion and sector type and the bevel-gear type. These cannot be made irreversible, and rely on reduction to secure the margin of safety on rough roads. Irreversible types are made in three principal types, the worm-and-nut, the worm-and-gear or worm-and-sector, and the ball-bearing type, which is a patented article used for lever steer on an electric. The first two types are practically universal in irreversibly steered gasoline motor car practice. The Cadillac gear is of the worm-and-sector type and irreversible.

From the foregoing, however, it is not to be inferred that all worm-gear steering gears are irreversible. Whether or not a gear or toothed section may turn a worm or screw depends upon the pitch.

WORM DRIVE IN AMERICA

Pern, Ind.—Editor *Motor Age*—Are there any touring cars using Reynold's rotary valve motor; if so, what are they and where are they made?

2—Does the Peerless Motor Car Co. make its own rear axles? If not, where does it get them?

3—Are there any American cars using the worm drive, and where are they made?—A. L. Snyder.

1—No cars using the Reynolds rotary valve motor have yet been placed upon the market.

2—The Peerless Motor Car Co. manufactures its own axles.

3—The Smith and Peerless trucks use

the worm drive, and the Flanders and Maxim-Goodridge electrics, but no American pleasure cars have as yet ventured to make this departure. There are rumors, however, that certain established manufacturers are contemplating the introduction of a worm gear gasoline pleasure car for the 1913 season. The Atlas cars, with Knight engine, made early in 1912, had a worm-driven rear axle, but these cars are not being manufactured at present.

GASOLINE AS A LUBRICANT

Ellis Island, N. Y.—Editor Motor Age—
—I would like to know something about the properties of gasoline as a lubricant. Would a bearing which is constantly bathed in gasoline and of large size, revolving at a speed not over sixty or seventy revolutions per minute with a light load be likely to heat up if no other lubricant than the gasoline were supplied?
—M. H. Foster, M. D.

Gasoline is absolutely worthless as a lubricant. As a cooling factor it is about as good as water. With a bearing such as you describe, provided it was smooth or polished, no lubricant would be necessary, although a cooling fluid would be advisable. Would suggest that such a bearing be packed in plumbago or graphite, as the gasoline will not wash this substance away.

BATTERY FOR ATWATER KENT

Toledo, O.—Editor Motor Age—Why is it that the Atwater Kent uni-sparker is never used in connection with a storage battery and what would result if so used?
—Fred J. Swartz.

You are mistaken in your idea that storage batteries are never used in connection with the Atwater Kent system. Very good results are obtained from this combination, when the proper type of battery is used. Ordinary 6-volt batteries are sometimes used, but they do not give as satisfactory results as those of higher voltage. The best results are obtained from the use of 8-volt liquid type batteries, whose voltage remains practically stationary, regardless of degree of discharge. This composition is rarely found in cells of under 80 amperes capacity. The gelatine composition of the smaller sizes, permits the voltage to decrease in proportion to the discharge, and soon permits it to get below the minimum for efficient operation of this system, which is 6-volts. The reason why accumulators are so seldom used as a current source for the Uni-sparker is because of the superior economy and length of life without renewal of dry batteries. Storage batteries were introduced into the ignition field because of the excessive current consumption of the vibrating-coil systems. The economy of the Atwater Kent system renders them unnecessary, but not inapplicable. The Atwater Kent system is of the mechanical break jump-spark type, and the induction is therefore not as high as the vibrator jump-spark system, hence a higher primary voltage is required.

Treatment of Rubber

How Rubber in the Raw is Gathered and Prepared for the Market

BARDSTOWN, Ky.—Editor Motor Age
—What kind of radiators have the 1912 Pope-Hartford cars?

2—Are they as efficient as the square-tube radiators?

3—Has the six-cylinder car a T-inlet manifold?

4—What are the methods used in getting rubber from the tree and preparing it for market?

5—Does it come from the bark or the tree?

6—How often are shipments of rubber made to this country?

7—When is the rubber gathered?

8—Is there any prospect of the price of rubber going down to 50 cents or 75 cents per pound?—Claude W. Wilson.

1—The Pope-Hartford radiator is of a special design that cannot be classified. It is built in sections with both horizontal and vertical tubes, the former preponderating.

2—The Pope company has never had cause for dissatisfaction with its radiators, and believes them to be the equal of any other type.

3—Yes.

4—The question is too deep to enter into thoroughly. Briefly, it is collected in the latex state, by the following processes: a. Tapping as for maple sap, by cutting a gash in the tree and catching the dripping sap in suspended cups. b. By cutting slanting grooves, in some cases in the shape of herring bones, in the tree, leading to a common collecting cup. c. Felling the tree, and cutting annular rings along the full length of the trunk, spaced at 2-foot intervals, the rubber being caught in individual cups. d. Tapping the vines, which also yield rubber, allowing the sap to coagulate itself, scraping off the coagulated mass when the vine has been completely bled. e. The extraction of rubber from the roots of these vines by a pounding process. f. The cutting out of sections of the trunk to facilitate rapid gathering at the expense of quality and the life of the tree. g. Tapping and coagulating on a small gutta-percha core. h. In the case of guayule, the Mexican rubber shrub, it is extracted by making a pulp of the whole plant, between rollers, and allowing the rubber to rise, as cream off of milk, when it is skimmed from the pulp of the plant.

Rubber is prepared

for market as crude rubber, by a process of coagulation and purification, the chief of which are enumerated as follows: a. Smoking, in which the latex or rubber milk, is coagulated by means of smoke and heat from a fire of palm nuts, on a wooden paddle. b. Sun curing. c. Coagulation in hollows in the earth or hollow tree trunks, by the aid of soap, lime, or potash. d. Coagulation on the tree or plant, as it oozes from the cuts. e. Coagulation in clay pits. f. Coagulation over a gutta core. g. Coagulation by boiling. h. Coagulation in small pans with the aid of acetic acid. i. The Mexican method of coagulation in vats.

All rubber at some stage of manufacture is smoke-cured, and when manufactured on a large scale, as on plantations, it is made into the form of crepe and sheets.

5—Rubber from trees comes from the sapwood of the trunk itself. It is also obtained from the stems of certain vines and their roots, and from the guayule shrubs.

6—Shipments of rubber to the United States are made very irregularly, the shipments for 1911 total, however, 82,921,465 tons. As near as may be estimated, shipments of crude rubber are made from Para to New York on an average of about three times a month.

7—Rubber is tapped in the spring of the year, which in South America is in September and October.

8—In view of the extensive cultivation of rubber that is now being done, and the plans for further enterprise along this line that are constantly being made; in consideration of the promises of eminent scientists to produce a practical synthetic rubber at much less cost than is required to obtain it in its natural state, and taking into account the advances that are being made in the economical collection of wild rubber, there seems to be much reason for the sanguine opinions of many on this subject. That it will reach 75 cents a pound is likely, but as for reaching as low a figure as 50 cents, opinions are speculative.



FIG. 5—BRAZILIAN METHOD OF COAGULATION

Overland in Two Chassis Models

OVERLAND cars for the coming season will be mounted on two chassis, model 69 replacing 59 and 71 replacing the 1912 model 61. The new cars present no radical differences from the Overland construction which has been in vogue for several seasons. Mechanically, they are very similar to one another and differ only in sizes of parts and in a few minor constructional details. Both motors are of the four-cylinder, L-head type, each cylinder being cast separately. The cylinder dimensions are given below:

	Horsepower	Bore	Stroke	Ratio
Model 69....	30	4 in.	4½ in.	1.12
Model 71....	45	4¾ in.	4½ in.	1.03

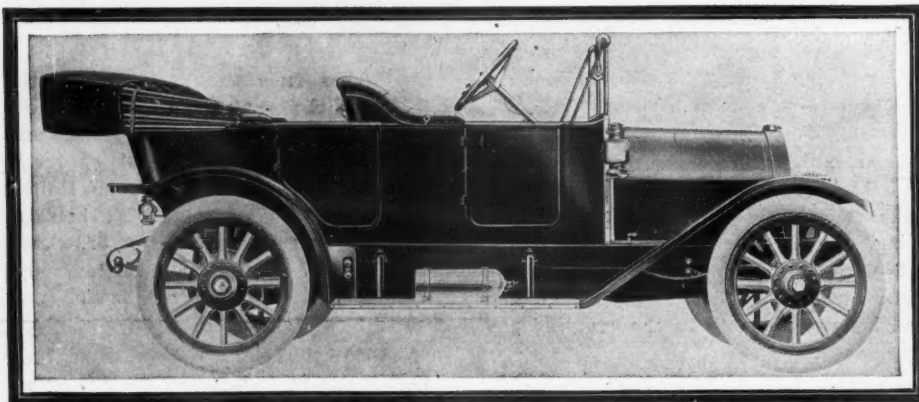
shaft bearings except the rear of model 69 motor have a length of 1¾ inch. This rear bearing has a length of 3½ inches. As to the model 71 motor, the three center bearings are each 1¾ inches long, the front bearing 1½ inches long, and the rear 4¾ inches. The connecting rods are the same material as the crankshaft, namely; drop-forged, carbon steel. The lower connecting rod bearings for the model 69 motor are 1½ inches in diameter by 1¾ inches in length, while these dimensions for the larger engine are 1¾ by 2½ inches respectively.

The lubrication of the two motors is not

The oiling of the model 71 motor is entirely by the splash system with an individual oil trough into which each connecting rod dips. The reservoir to which the oil eventually finds its way is at the bottom of the crankcase and the supply is replenished through a breather pipe. The oil is pumped from the reservoir to the sight feed on the dash, after first being filtered. From the dash it flows by gravity back to a spreader at the center of the crankcase and thence to the various troughs. The oil pump is operated by a spiral gear from the camshaft. A sketch of the oiling system on model 71 is shown herewith.

Cooling of both motors is by the thermo-syphon system, which eliminates the water pump. With this system of water circulation, the property of the expansion of the cooling water into part steam on becoming heated is made use of. The water enters the jackets at their lower ends, and on becoming heated due to the explosions, rises and finally flows out through the water outlet manifold at the top of the cylinders into the radiator. Here it is spread and cooled, flowing down to the inlet and back to the bottoms of the jackets.

Schebler carbureters are continued on both models, and the fuel is fed to them



MODEL 69 ROADSTER FOR 1913

Design features of the Overland motors are of the usual type. The valves are interchangeable and are provided with nickel-steel heads. For the model 69 motor, they have a diameter of 1 13/16 inches and for the 71 motor 2 1/8 inches. They are operated by the conventional type of tappets which bear directly on the cams. The camshafts are of drop-forged steel with the cams integral, and are mounted on three bearings as follows:

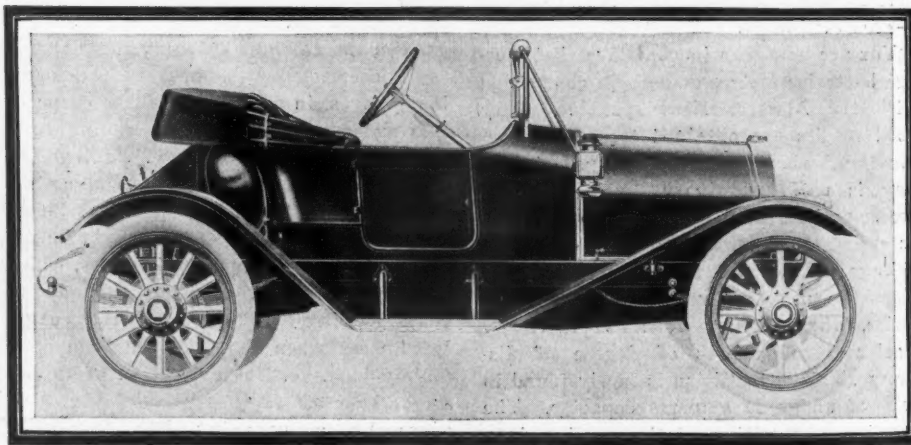
MODEL 71 MOTOR

Front: Length 2½ inches; diameter 1 inch
Center: Length 2¾ inches; diameter 1 inch
Rear: Length 2¾ inches; diameter 1 inch

MODEL 69 MOTOR

Front: Length 2½ inches; diameter 1½ inch
Center: Length 2½ or 2¾ inches; diameter 1½ inch
Rear: Length 2½ inches; diameter 1½ inch

The pistons are fitted with three rings each and at their lower ends they have oil grooves, each groove being provided with six drain holes which are equally spaced around the piston circumference and which form an outlet for the excess oil and prevent it from getting up to the piston heads. This is a new feature. The wrist-pin bosses are amply large and wrist pins are fixed to them. The crankshafts are provided with five bearings each, one bearing between each two cylinders, and one at either end of the motor. On both motors all crankshaft bearings have a diameter of 1½ inches. All crank-



OVERLAND MODEL 69 TOURING CAR

the same, that of model 69 being partly by splash and partly mechanical. The crankshaft bearings as well as those of the connecting-rods are lubricated by the oil splashed into them by the lower ends of the connecting rods dipping into the oil contained in the lower part of the crankcase. This provides for all the lower bearings, while the cylinders are lubricated by a force-feed oiler which is cam-operated, as shown in one of the illustrations herewith. Its cam is mounted directly on the camshaft. The three oil grooves already mentioned distribute the oil which is sent to the cylinder walls by this mechanical oiler.

by gravity from the tanks. Ignition of both models is taken care of by Remy magneto systems, and batteries. The battery for model 69 is composed of dry cells, while for model 71 a storage battery is used. However, these batteries are intended only for starting the cars. For regular running, the Remy magnetos and non-vibrating coils furnish the current. The model 71 storage battery operates in connection with a generator which furnishes current for lighting the head, side and rear lamps. The lighting generator is driven at all times when the motor is running, and consequently the electrical energy which it produces in the day time

No Radical Changes Made for 1913

when the lamps are not required is passed to the storage battery. Whenever the lighting current required is in excess of that being generated, the supply contained in the storage battery is drawn upon to assist. Whenever the car has a speed of 10 miles or more, the current passes directly to the lights, and any excess amount produced goes to the storage battery. The generator produces its maximum current when the car is moving at a speed of 18 miles an hour, or more. Its maximum output is 10 amperes.

The motors are suspended in a type of subframe. This consists of a cross

speed, selective sliding-gear type. The gear ratios for the two models, however, are different, and are given below:

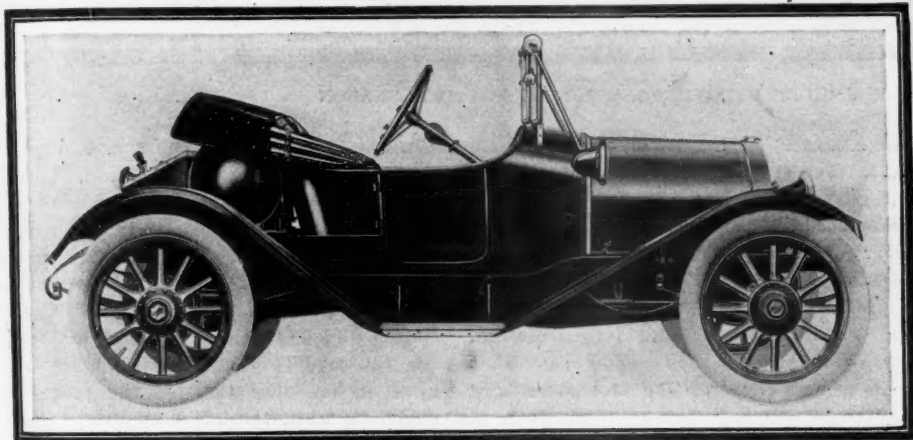
Model 69—High: 1 to 1; intermediate: 1.55 to 1; low: 2.57 to 1; reverse: 3.30 to 1
Model 71—High: 1 to 1; intermediate: 1.72 to 1; low: 3.2 to 1; reverse: 3.93 to 1.

The rear axle of model 69 is what is known as the three-quarter floating type, while that of model 71 is floating, the distinction being that while with both types the load is carried entirely by the housings and not by the axle shafts, these shafts of the former, besides holding the rear wheels in place, also drive these wheels. The axle shafts of the floating

prevent the leakage of the lubricant from the housings.

The brakes on both models are alike both mechanically and in size. They have a diameter of 13 inches and are 2¼ inches in width. This size represents an increase over the 1912 model for the smaller car. The brake operation has been somewhat simplified. Emergency brakes are internal expanding, while the service or foot brakes are external contracting. The former operate through the use of cams, which cause the brake shoes to expand. The external brake bands operate by means of lever arrangements. The brake-equalizing device as applied to the 1913 cars is new to Overland design. The same principle of equalizing the brake pull by means of cross rods as usually employed is found, but the manner of working it out is somewhat different. Instead of two brake operating shafts, as formerly used on the model 59 Overland, the new models are equipped with an assembly consisting of a tube and a shaft, thus doing away with one of the shafts and simplifying the construction.

As to the frames, these are well-braced throughout with side members. Each is dropped as the body views will show, and that of model 69 is uniformly ¼ inch less in dimension than model 71. The latter has a depth of 4 inches and a face

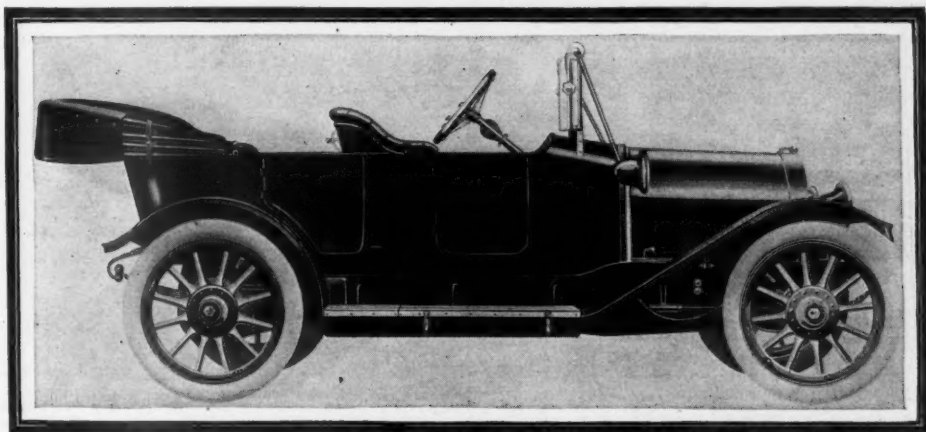


OVERLAND MODEL 71 ROADSTER

piece at the front end to which the crankcase fastens, and two diagonal members one at either side at the rear of the crankcase. These bolt to the side frame members and run diagonally to the cross member which is placed just to the rear of the flywheel. One of the rear arms of the crankcase bolts to each of these rear subframe members.

The clutch is of the cone type on both models, and from this point the power is conveyed to the gearbox on the rear axle through a propeller shaft which is inclosed within a torque tube. The latter is fastened at its front end to a cross member of the frame by means of the U-shaped construction of its front end. There is a joint to the frame member at either side of the drive shaft, as shown in the top view of the chassis herewith. The rear end of the torque tube bolts directly to the gearset housing, which is mounted a little forward of the rear axle proper, and which in turn bolts to the axle housing. To maintain the proper alignment of the rear axle at all times, there are two radius rods, which run from the center of the cross member to which the torque tube arms bolt back to the rear axle at either side near the brake drums.

The gearset in all essentials is the same for both models, also. It is of the three-

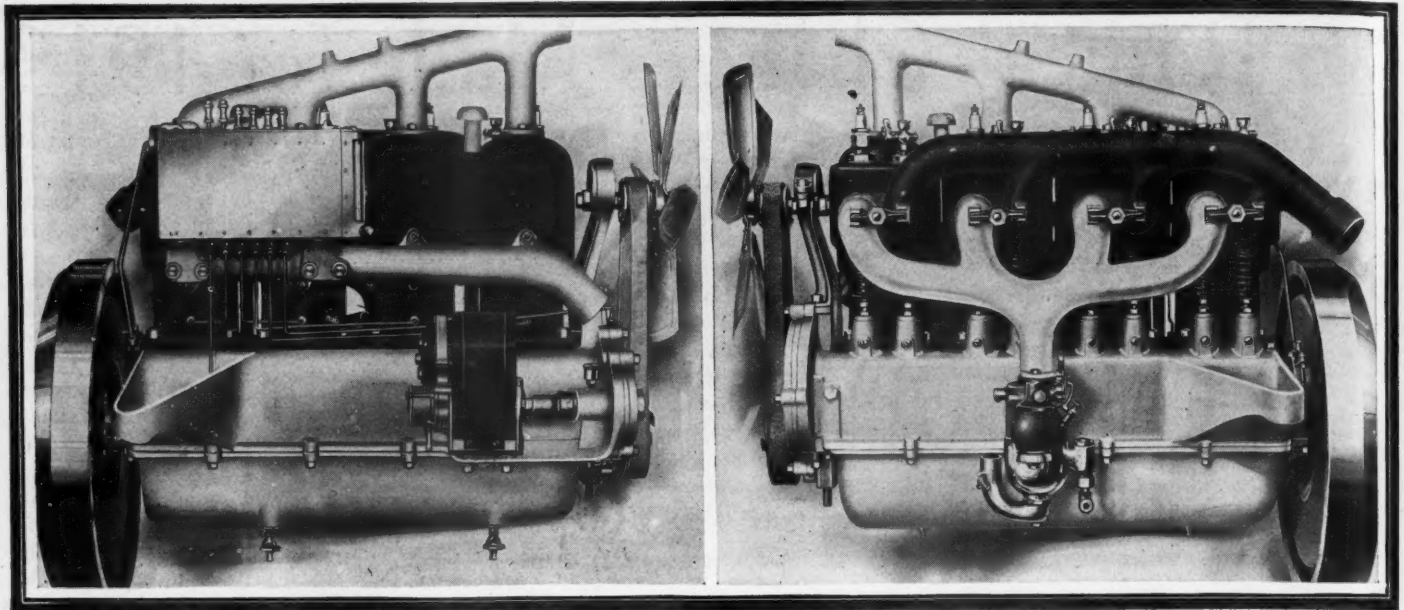


MODEL 71 TOURING CAR OF 1913 OVERLAND

type have only the one function to perform—that of turning the rear wheels. The wheels are fastened to the housing in this type, and the axle shafts may be taken out without removal of the wheels. The differential and wheels of model 69 axle are mounted on Hyatt roller bearings, while with model 71 these parts run on Timken roller bearings. As the Timken bearings are combined radial and thrust types, no other bearings are required, but in the model 69 axle the side thrust of the differential is taken up by a ball thrust bearing on either side. Special provision is made in each axle to

width of 1½ inches. This applies to the side rails, which are of channel-section, cold-rolled steel. Model 69 frame is of No. 9 United States gauge (.156 inch) and model 71 of No. 8 United States gauge (.172 inch) thickness. The top view of the chassis of model 69 will show where the various cross members are placed. These have relatively the same locations and form for model 71.

As to the springs, they are half-elliptic in front on all models, full-elliptic in the rear on model 69, and three-quarter elliptic in the rear on model 71. The details of these springs follow:



RIGHT AND LEFT SIDES OF OVERLAND MOTOR FOR 1913 SEASON

Model 69—Front: Length, 36 inches; width, 18 inches. Rear: Length, 42 inches; width, 18 inches. Number of leaves: Six.
 Model 71—Front: Length, 38 inches; width, 24 inches. Rear: Length, 44 inches; width, 24 inches. Number of leaves: Seven.

The wheels are all fitted with quick-detachable tires, the size for model 69 being 32 by 3½ inches, while that for model 71 is 34 by 4 inches. The front wheels of both models are mounted on Timken roller bearings.

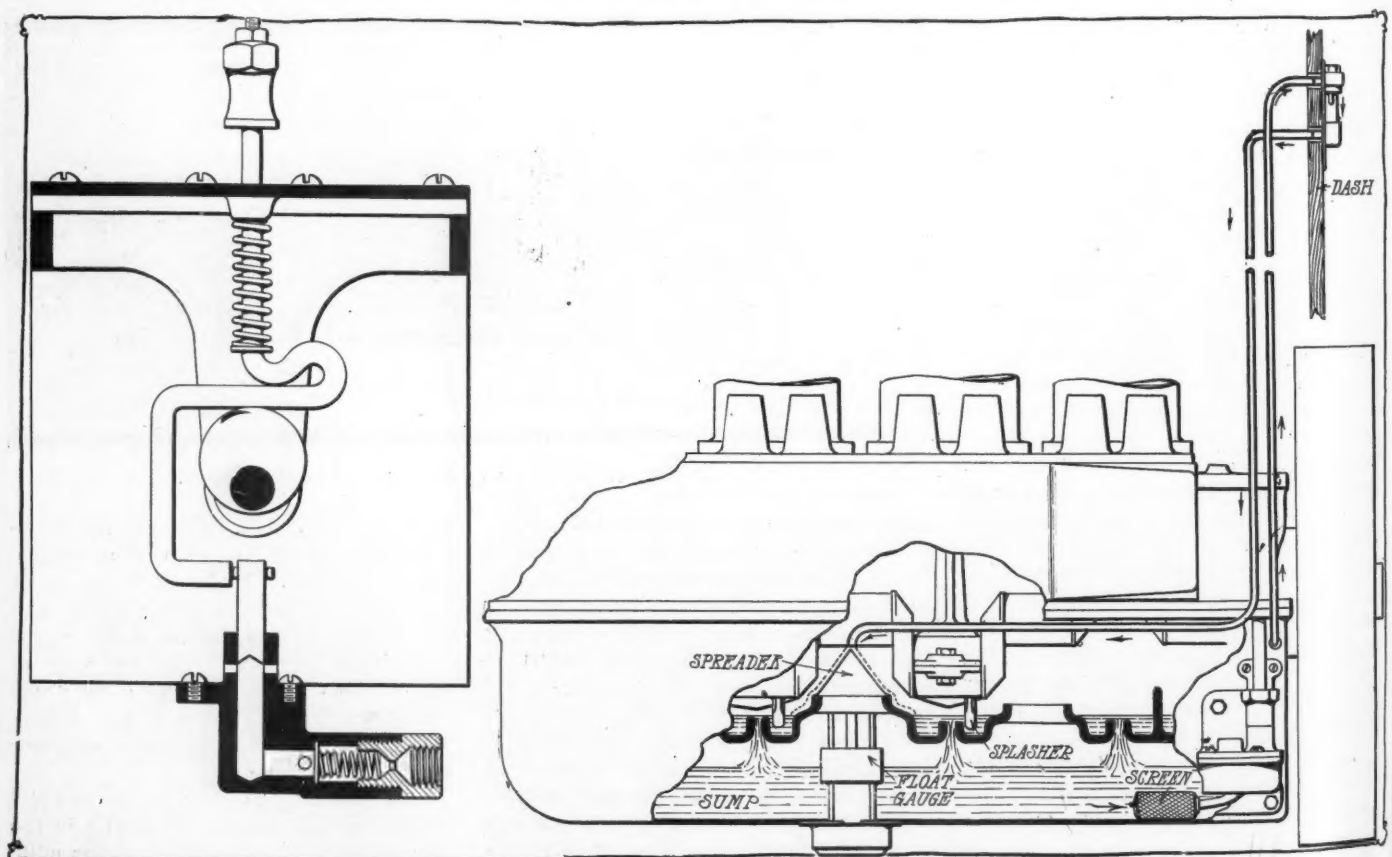
The steering gear is of the full worm-and-gear type, and is adjustable. On top of the steering wheel, the control levers

are mounted on the usual type of quadrant. The steering is right-handed, while the gear-shift and emergency brake levers are placed in the center. The gear-shift lever operates through the conventional form of H-gate.

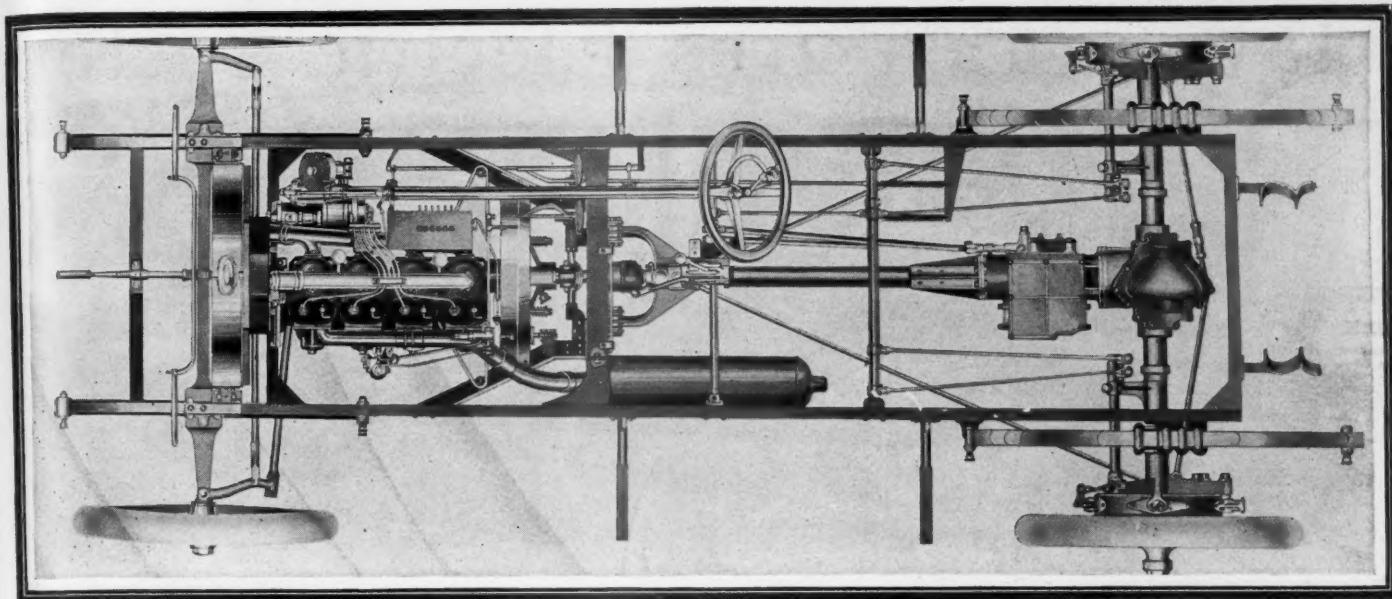
Bodies on all models have been refined, and given a deeper and longer design. Seats also have been made somewhat deeper and lower. The roadsters are equipped with tool boxes in the rear of the seats back of the fuel tanks. These boxes have slanting tops, and tire irons

are also provided so that spares may be mounted above the boxes. On model 71, the tool boxes running the lengths of the running boards have been retained, which, while affording all the necessary room, give the clear running board appearance. The wheelbases of the two chassis are 110 inches and 114 inches, the former being for the model 69 and being an increase of 4 inches over that of the preceding model 59, while the latter applies to model 71.

Equipment for the two for the 1913



CRANKCASE SPLASH OILING SYSTEM ON THE OVERLAND MOTORS FOR 1913



PLAN VIEW OF CHASSIS OF OVERLAND MODEL 69

season is most complete. The list price for model 71 includes mohair top and top envelope, acetylene self-starter with Prest-O-Lite tank, robe rail, foot rest,

speedometer, complete electric lighting outfit, tire irons, running board tool boxes, horn and full complement of tools. Model 69 is fitted with acetylene self-starter,

two gas headlights, gas tank, side and tail oil lamps, battery, horn, tools, mohair top and envelope, windshield, speedometer and tire carriers.

Details of New Regal Clutch Control

THERE has been adopted by one maker of motor cars at least, a policy in regard to publicity which could be followed by others with benefit to makers and readers as well. This is the method of keeping the public informed as to the details of construction and design of the different elements of the car by a short article descriptive of some part or feature with a clear illustration of that feature. From time to time there have appeared in *Motor Age* bits of information in regard to the construction or design of Regal cars, once it was the gearset, another time the rear axle, etc. This time it is an improvement in the clutch mechanism that is elucidated, and it is this that has called forth the foregoing comment.

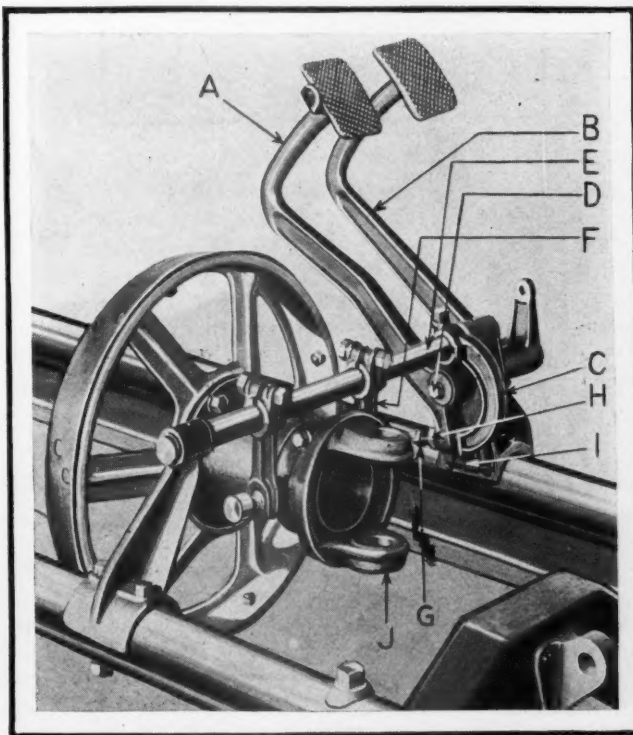
To provide a clutch spring heavy enough to hold the clutch engaged so as to always transmit the maximum power of a motor and, at the same time, avoid the necessity of excessive pressure on the clutch pedal to disengage the clutch, is a problem which often confronts the motor car designer. On the Regal underslung model T touring car and model N Roadster, this problem is solved by providing a special combination of levers so that a child, it is claimed, can easily operate the clutch.

By referring to the illustration, it will be seen that the clutch pedal A is carried on a shaft D which is below the main clutch operating shaft E. The pedal is extended below its shaft and through the lower end is a screw G locked in place with a nut H. The end

of this screw comes in contact with the lower end of lever C which is keyed rigidly to the clutch operating shaft, downward from which levers extend which engage the collar that throws out the clutch. It will be noticed that the effective length of lever C is considerably greater than the length of the lower part of the clutch pedal which operates as a lever applying pressure to the end of C, consequently the turning effort applied to the clutch operating shaft E is correspondingly greater than it would be if the clutch pedal itself were keyed directly to it.

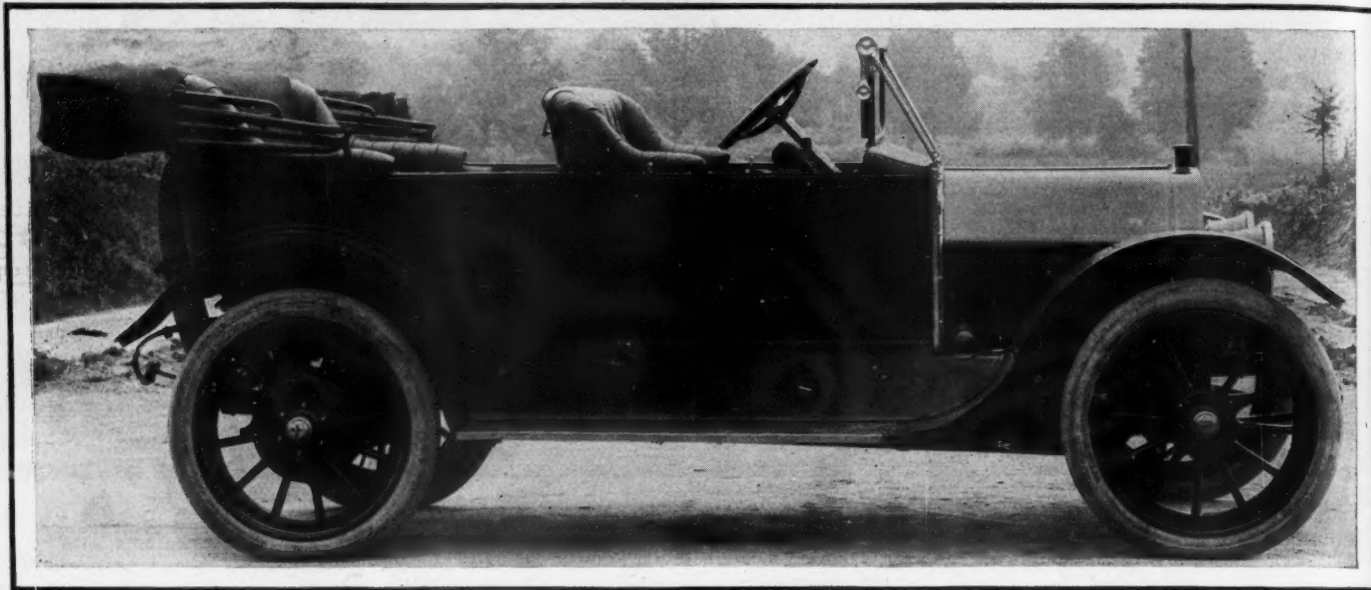
To prevent the lever C and the nut of the screw G from striking together and causing an annoying rattle, the coil spring I is provided. An adjustment feature which permits of setting the clutch pedal in its proper relation to the floor-board is obtained by the screw G. It will be noticed that to raise the pedal pad, this screw can be turned to the pedal arm and back out if it is desired to lower the pad, the nut H locking the screw in the desired position.

Of interest in Regal design in connection with this member is the tubular sub-frame, which recalls the practice of some French manufacturers.



FEATURES OF NEW REGAL CLUTCH MECHANISM

Haynes Features Electric System



HAYNES MODEL 22 TOURING CAR SHOWING CLEAN BODY LINES

ADDING one more to the growing number of constitutionally self-starting cars that are making their appearance on the 1913 market, the Haynes appears in but one model for 1913, the model 22, which is the development of last year's model 21. The Haynes line of 1912 included two other models, one larger and the other smaller than the 21, which have been discontinued for the coming season.

This chassis bears close resemblance to its predecessor; embodying the characteristic Haynes T-head, 4-cylinder, long-stroke power plant and liberal wheelbase.

The new model shows many added features, improvements, and refinements over 1912, but withal the new model embodies few radical departures. The most interesting innovation is the new built-in electric-lighting and self-starting system. It consists of two separate but correlated elements, the generator and cut-out, and the battery, self-starting motor, and lamp system. The 12-volt generator is situated on the right side of the motor and is driven from the right camshaft. It is wired to a cut-out on the dash, which alike automatically prevents overcharge of the battery and leakage of current from thence to the generator armature at slow speeds. The battery is carried on the left running board, and is of 100 ampere hours capacity. All five lamps are supplied from this battery, but three wires being used in connecting them.

The self-starting motor, which also is supplied from this battery, has, like the generator, but two connections. It is geared to the flywheel by means of teeth cut in the latter's periphery, a sliding gear on a short idler shaft, geared direct to the motor armature, meshing with these teeth.



CRANKLESS HAYNES HEAD-ON

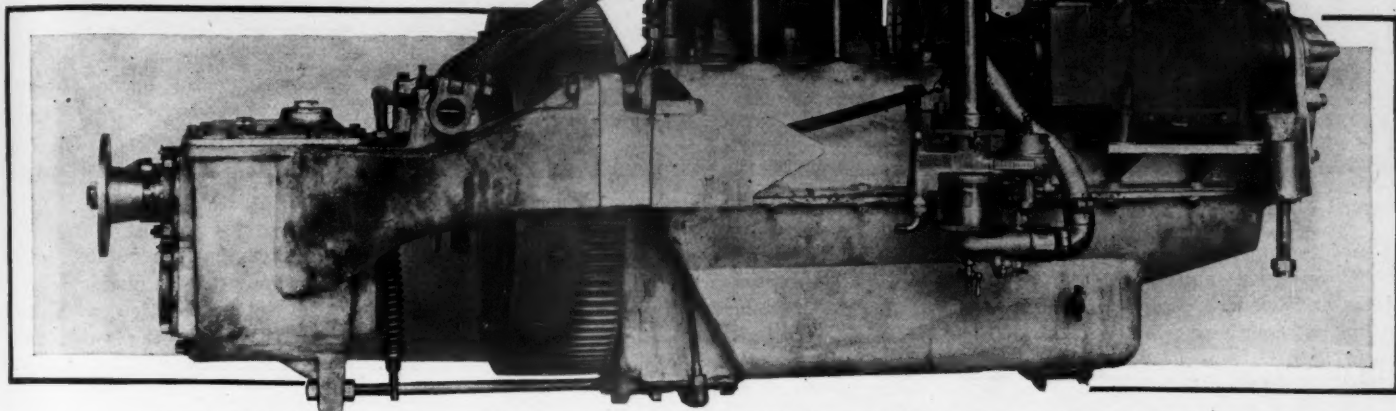
The starting motor is mounted on the left side of the engine, forward of the flywheel and beneath the frame. The control of the sliding gear presents perhaps the greatest novelty yet introduced. This control is by means of the gearshift lever. A small gate pedal on the quadrant raises a lid over the starting slot, permitting the lever to enter it for the purpose of starting. A quick, vigorous forward thrust on the lever in this position throws the sliding gear into mesh with the teeth on the flywheel and starts the motor. Upon the response of the engine, the lever, on being released, is automatically returned to neutral by means of a spring, and the gate closed; when the lever is used in its normal function of gear shifting. The quadrant is further notable in that it is completely and legibly calibrated to avoid confusion of its many functions. It is provided with a small perforated lug, the

hole in which registers with a corresponding hole in an extending arm of the lever, beneath the quadrant, when it is in neutral position, to permit the lever to be locked so by means of a small padlock.

Other improvements that have been made include lengthened springs, the front springs having been lengthened from 37½ inches to 40 inches, and the rear, from 39½ inches to 48 inches in length. The frame at the front spring hanger has been made 2 inches lower, the oil pump has been placed at the top and outside of the crankcase, instead of within its bottom, affording better accessibility. The new pump is located directly over the intake camshaft just forward of the flywheel, on the right side of the motor, and is operated by an eccentric on the camshaft. It is of the constant-flow force-feed type, and has a small reservoir chamber at the top. The rear springs, which are still of the three-quarters elliptic type, have undergone a slight change of suspension, the springhanger bracket being attached to the end of the frame, the two lower leaves of the upper portion, extending beyond the rest to act as a stop on the rubber bumper on the lower spring.

Otherwise, former Haynes practice has been followed practically throughout. The long 120-inch wheelbase is continued. The motor is of the T-head type, supported at four points, with cylinders 4½ by 5½ inches, offset ½ inch. The carburetor is a Stromberg, type B, with a hot air connection to the exhaust manifold. An Eisemann, high-tension dual system of ignition is used, and the combination circulating splash system of lubrication with oil reservoir beneath the crankcase. A centrifugal water pump is used, the pump being driven from the magneto shaft, and

operating in conjunction with a honey-comb radiator. Of especial interest in this motor is the exceptional length of the valve-rod guides. The advantages of this construction are protection of the valve rod from the action of the exhaust gases, and a decided decrease in the chances of warping and crystallization. The valves themselves are of large diameter, $2\frac{1}{4}$ inches, with a $\frac{5}{16}$ -inch lift. The valve rods and springs are individ-



RIGHT SIDE OF HAYNES MOTOR SHOWING NEW OIL PUMP, GENERATOR AND TOOTHED FLYWHEEL

ually housed, and adjusted to produce the minimum of noise, while seating perfectly. The crankshaft has three plain bearings of special metal, and the camshafts run on a like number of bronze bearings. The clutch is of the contracting band type, the clutch drum being made of hardened steel in the new model in place of bronze as heretofore.

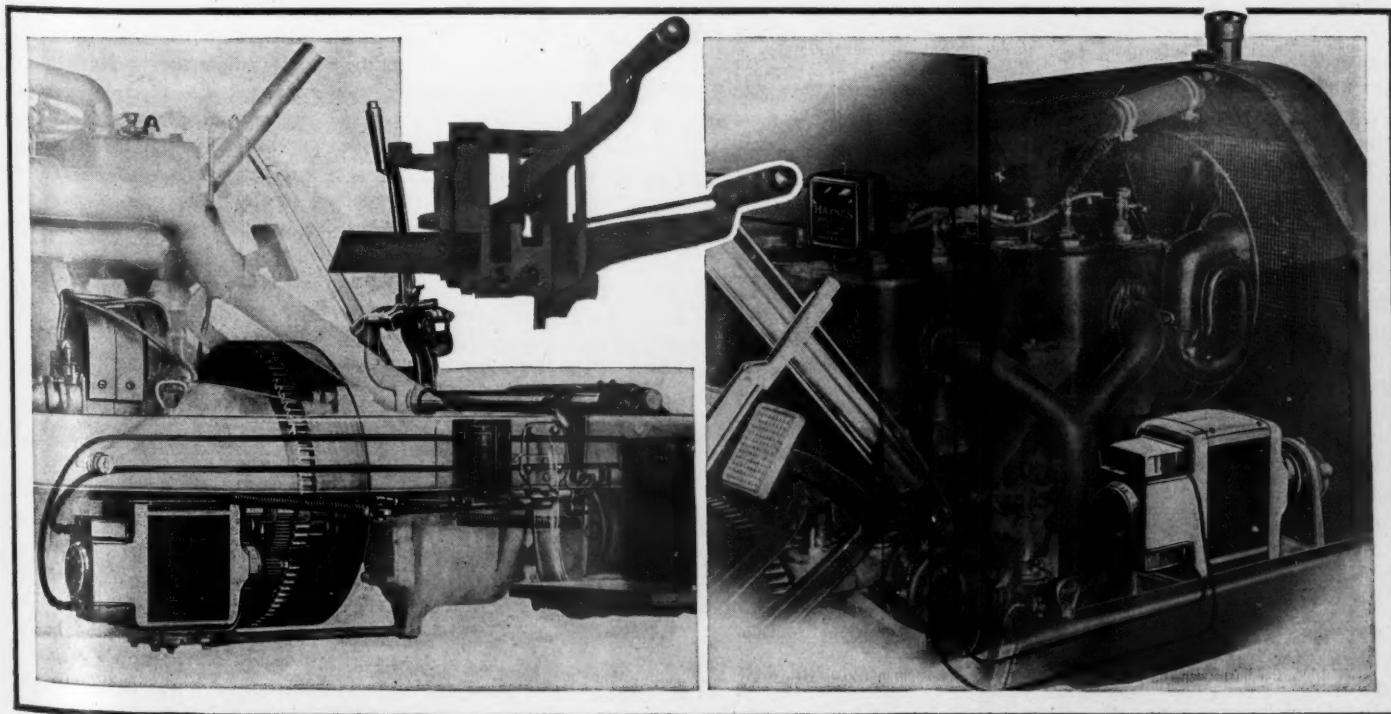
The selective gearset provides three speeds forward and one reverse, and is a semi-detached unit with the motor and clutch. It operates on Timken roller bearings, and drives through a shaft to the

floating Timken axle. Brakes are of 14-inch diameter, and $2\frac{1}{2}$ -inch face, the service brake being of the contracting band type, operated by the right pedal, and the emergency of the internal expanding type, operated by the lever to the right of the gear-shift quadrant.

The frame is of pressed channel steel, 4 by $1\frac{1}{2}$ inches, inswept 3 inches at the front. The propulsion is through a torsion tube which is spring-mounted at the left of the driveshaft. The frame is well-braced by gusset plates at the rear and has a 2-inch kick-up, over the rear axle.

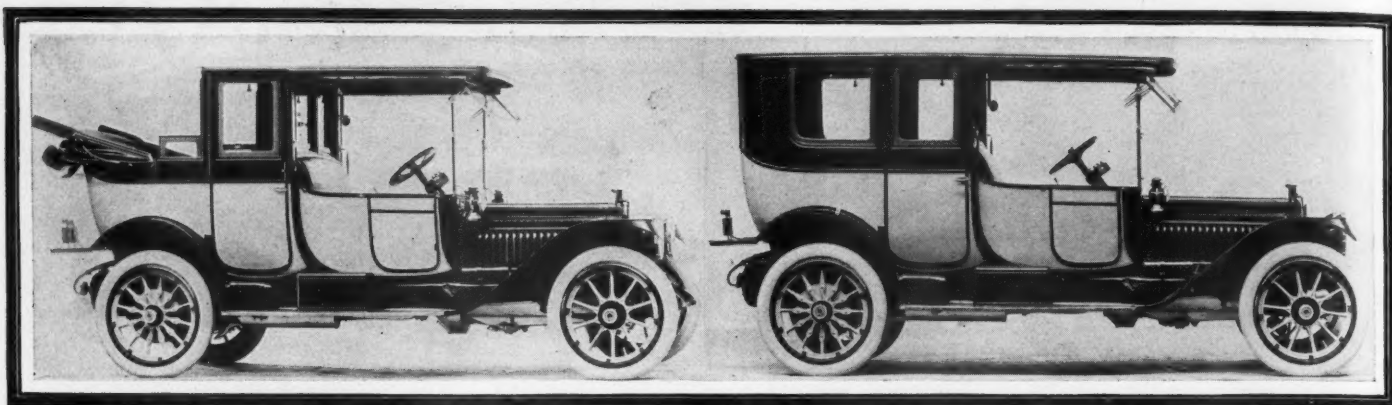
Motor control is by spark and throttle levers on top of the wheel, and by a special carbureter adjustment for starting in cold weather, located on the steering column. A foot accelerator is placed to the right of the brake pedal.

Steering is by worm-and-gear, with a corrugated hand-wheel. The front axle is of Timken manufacture, a 2-inch drop forged I-beam type. The tie-rod is carried at the rear of the axle and is suitably dropped. The tires are 36 by $4\frac{1}{2}$, the tire width having been increased $\frac{1}{2}$ -inch over last year.



NEW HAYNES ELECTRIC STARTING, LIGHTING AND IGNITION SYSTEM WITH SPECIAL GEARSET QUADRANT

Packard Enters Little Six Lists



PACKARD 38 LITTLE SIX LIMOUSINE AND LANDAULET FOR 1913 SEASON

TO meet the demand for a medium-powered six-cylinder car, the Packard Motor Car Co. will place upon the market within a month a smaller six-cylinder model than its model 48, which made its initial appearance last season. The new model will be known as model 38, deriving its name from its S. A. E. horsepower rating of 38 horsepower.

In the standard body types of touring cars and phaetons, this latest addition to the Packard line has a wheelbase of 134 and 138 inches, respectively. With roadster or runabout body the wheelbase is 115½ inches. Other body types, such as limousines, landaulets, broughams and coupes are furnished on the new chassis.

Several features of the new car are entirely different from former Packard construction. These are the left-hand drive and control, the combination electric starting, lighting and ignition system and the placing of starting ignition, lighting and carburetor controls on the steering column. The last named feature is entirely new and appears for the first time on any car, it being devised entirely by the Packard company.

Body features remain distinctly Packard. The characteristic shape of the hood which has distinguished these cars ever since their inception is found on the new 38, while in all other respects there can be noticed no departure from accepted Packard body design.

The 38 motor is entirely new. Not since 1906 has any Packard model been equipped with an L-head motor. But this is the type which is used on the new six. The cylinders, which are cast in pairs, have a bore of 4 inches and a stroke of 5½ inches, giving a stroke-bore ratio of 1.375. The stroke is the same as that of model 48 six, which is a T-head type of motor, and which presents the same design features as those of the four-cylinder models.

Another entirely new feature of the motor is the inclosing of the valves by cover plates, one plate for each pair of cylinders. The valves are all on the right side, while the carburetor is placed on the

left. Hence the intake manifolding, after it leaves the carburetor, is split up into three branches, one connecting to each pair of cylinders. These manifold branches pass between each block of cylinders to the valve side of the motor and not over the top of the cylinders as is done in some designs in which valves and carburetor are on opposite sides.

Referring to the horsepower curve, it will be seen that while the new six has a rating of 38 horsepower, this figure is only nominal, as the motor is capable of developing an actual maximum of 60 horsepower at a speed of 1,600 revolutions per minute. Still further reference to the curve shows that at a speed of 1,000 revolutions a minute, the developed horsepower is about 47. The rated horsepower is obtained at about 800 revolutions, still further evidence of the inaccuracy of the present S. A. E. formula when applied to motors having a long stroke.

As to the other features of the motor, it may be said that they conform strictly to general Packard design. The carburetor is of the same type as used on the other models, making use of a diaphragm governor. The water pump and governor, however, while performing their related functions in exactly the same way as on previous models, are separate in the new 38.

To those not familiar with the Packard type of carburetor, it might be briefly said that its hydraulic governor has a tendency to maintain a uniform engine speed. The diaphragm of this governor is in contact with the water on one side, and the pressure of the water system has a tendency to bulge it out, the amount of the bulge depending on the water pressure, which increases or decreases with the increase or decrease of the engine speed.

The other side of the diaphragm is connected with the carburetor throttle, and hence the greater the bulge, the more the throttle is moved and the less fuel is admitted to the motor. It will be seen

that the diaphragm has its greatest outward bulge at the greatest engine speed, and hence the interconnection with the throttle closes the latter the most, and vice versa. This makes for uniform engine speed.

As to the lubricating system of the new motor, this is like that used on the 48 six in all respects. The main bearings, and upper and lower connecting rod bearings are positively lubricated by force feed by a pump driven by worm gear from the camshaft. With this lubricating system, the oil supplied varies with the engine speed. In addition to the force system, there is an auxiliary lubricating system which comes into operation at high speeds. This supplies oil to the cylinder walls by oil leads entering the cylinders on the valve side. These auxiliary leads connect to the main lubricating system through a check valve at the rear end of the motor. The auxiliary system connects directly with the throttle control, and the amount of oil supplied varies directly with the throttle opening. After lubricating the bearings, the oil flows into a reservoir at the bottom of the crankcase, both ends of which slope toward the strainer and oil pump.

After being strained, the pump sends the lubricant through its cycle again. The normal oil capacity of the crankcase is 1 gallon. The baffle plates which are used on the 48 motor are also found on the new 38. These prevent the oil which is sprayed to the camshaft bearings from the lower connecting rod bearings from getting up into the cylinders. A continuous oil duct through the crankshaft distributes oil to the connecting rod bearings and the piston pins.

Taking up the other features of the motor, the crankcase is formed of two horizontal sections, the upper of which is supported by the main frame of the chassis and which forms the motor base. A rearward extension of the upper section, with the covers, forms the clutch housing and supports the rear clutch shaft, clutch-shifter and clutch pedal bearings. The

motor has three-point suspension, due to the fact that there is only one support in the front which is on a bearing in the center of a heavy cross member. This construction is common to all Packards.

Considering the new Packard features, the adoption of left drive and control is perhaps the most significant. This consists of the placing of the gearshift lever and the emergency brake lever at the driver's left and next to the left front door, in addition to the placing of the steering wheel on the left side.

Unique in its construction and in its functions is the control board, so called, which places within easy reach of the driver all switches and other controls which are necessary to the operation of the car at any time. A plan sketch of the new control board is shown herewith. Referring to this diagram, it will be seen that all the lighting switches are placed in a row at the left side, while the switches which govern the ignition, dry cell and generator currents are provided with a lock, which prevents the use of any of the electrical apparatus. To the right of the board, the carbureter adjustment indicator is placed. This indicator operates in connection with the lever mounted on the steering column below the control board. The button marked "starting shutter" is for use in partially throttling the air supply to the carbureter so as to facilitate starting by furnishing a rich mixture to the cylinders. It operates by being pulled up until a stop is reached.

The location of the new control board on the steering column is shown in the body illustrations. It is placed underneath the wheel, and enough below it so that the hand may have plenty of room. The board is stationary, as the outer steering column does not move, the steering rod turning within it. The use of this control board takes practically all the

apparatus off the dash. The only devices which remain there are the speedometer, oil gauge, fuel tank pressure gauge and priming button. The latter is placed within easy reach of the driver's foot and is for cold weather use. Pushing it sends charges of acetylene gas to the cylinders to aid in starting the motor. The acetylene is contained in a tank which is carried at the lower left side of the hood as shown in the body illustration.

The combined electric starting, lighting and ignition system on the new 38 is seen for the first time on a Packard model. For starting the engine, the electric generator is temporarily converted into a motor and by drawing current from the storage battery turns the crankshaft. The system is of the Delco type, which has been explained several times in these columns. On the outer rim of the flywheel, teeth are cut, which mesh with those of the motor-generator gear for starting. To crank the motor, the driver simply presses the starter button on the control board, and at the same time presses down on the clutch pedal. This automatically engages the electric motor gear with the flywheel teeth, and sends current to the temporary electric motor, causing it to revolve the crankshaft. After the engine is running on its own power, the operator releases the starter button and the clutch pedal. The generator then acts as a generator and is driven by inclosed gears. It generates current for lighting, for ignition and for charging the storage battery, which has an 80 ampere-hour capacity.

The system also makes use of a battery of dry cells, which are used for emergency as well as for furnishing ignition current at the time of starting. They are employed because the current from the storage battery is being used to drive the electric motor when starting the engine, and if at the same time this storage bat-

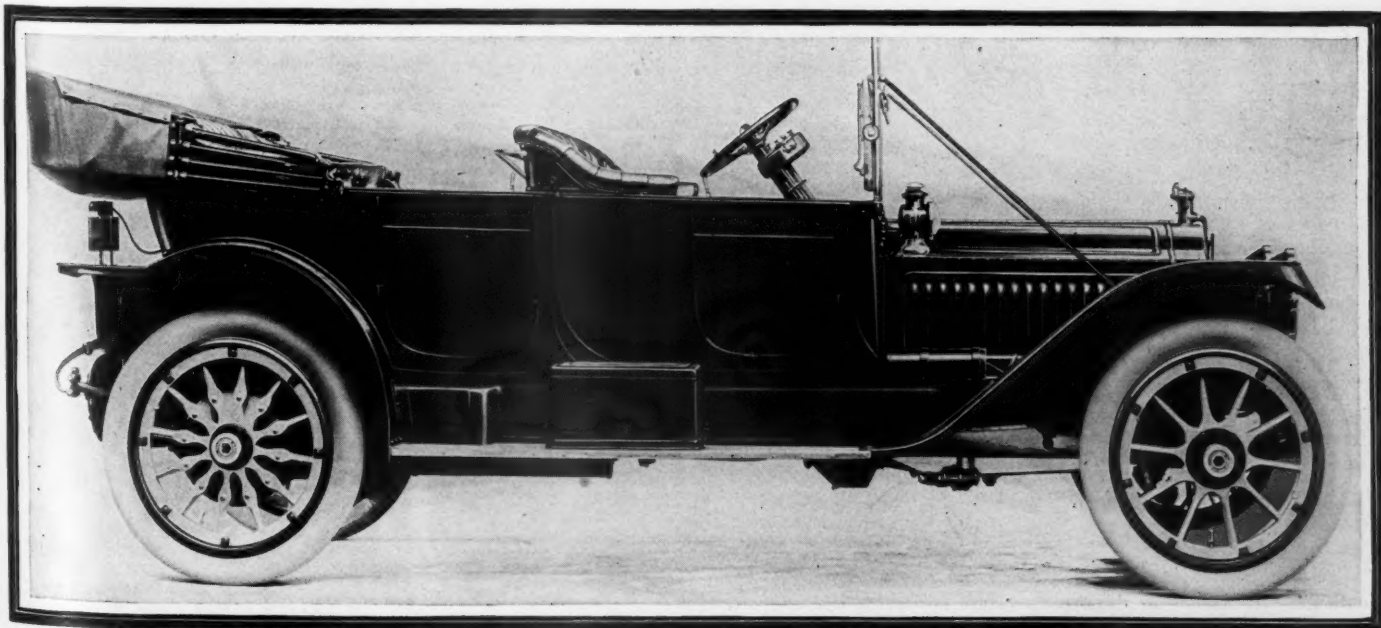
tery current were required to ignite the cylinder charges, the drain would be too great and only a weak spark would be produced. After the engine is running on its own power, however, there is no longer this starting drain, and the dry cells are then not needed. The driver takes care of this by switching from the dry battery current to the generator running current after starting.

Lighting is accomplished by the use of the storage battery current when the motor is idling or not running, but when the engine has attained a speed of about 200 or more revolutions per minute, the generator furnishes the current. The ignition current for running is also supplied by the generator. Ignition is of the dual type. A single set of spark plugs is used for both this and the dry battery system. The battery and battery control device are placed on the right running board, while the generator is mounted at the rear left side of the motor—at the flywheel, necessarily.

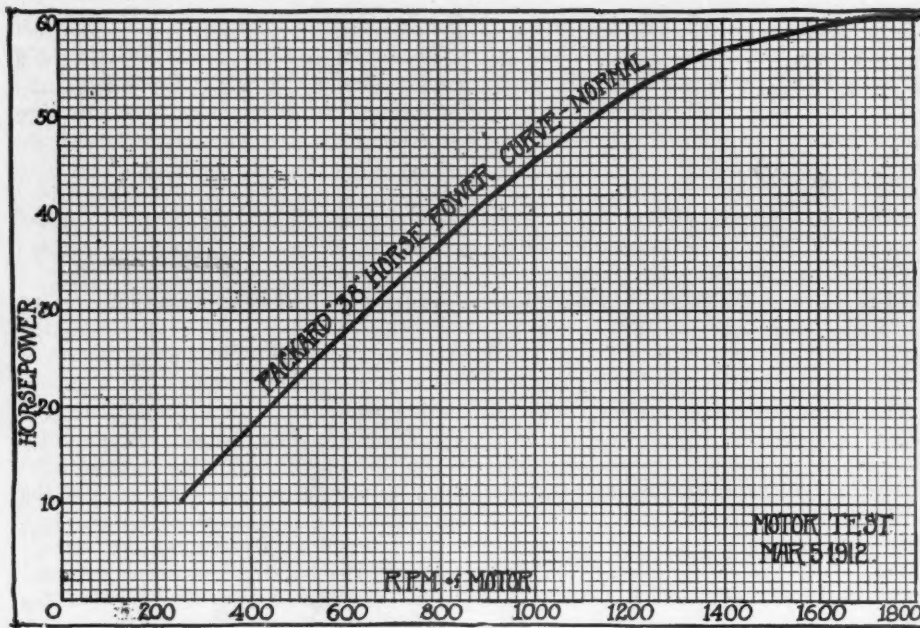
In all other respects the new 38 adheres to the same design features as those used on the model 48 six. The constructional principle of two units is carried out, the motor and clutch forming one unit, and the rear system, consisting of gear set, final drive and differential, the other. The clutch, which is integral with the first unit is of the multiple-disk type, there being five lined driving plates and four steel-driven plates.

Power is transmitted from the motor unit to the rear axle unit by the conventional type of drive shaft. It is of large diameter and is furnished with two universal joints, one at either end. A torque arm runs parallel to the drive shaft from one unit to the other.

Like all other Packard models, the 38 gear set is bolted directly to the rear axle housing by means of an integral flange. The usual form of Packard se-



PACKARD 38 LITTLE SIX PHAETON FOR 1913



BRAKE HORSEPOWER OF PACKARD 38 MOTOR AT VARIOUS SPEEDS

lective three-speed gear set is used, the gear-shifting lever at the driver's left moving backward and forward in a single quadrant.

The rear axle is substantially housed, the tubes being of large diameter of heavy-gauge pressed steel. The housing proper is internally ribbed and is of aluminum. The front axle is of I-beam type with bowed center. The steering knuckles are provided with integrally-forged yokes, and the knuckle pin is somewhat inclined for easy steering. The steering gear embodies the worm-and-nut feature. The brakes are of the conventional internal and external expanding types. The service brakes are external contracting, while the emergency brakes expand internally. The latter are provided with bayonet locks to prevent any rattle.

The frame is of deep channel section of pressed steel. It has a kick-up over the rear axle, is narrowed in front for shorter turning radius, and extends back to protect the gasoline tank, which is also found in the rear on this new model, as well as being a feature of all other Packards this year. The location of the fuel tank here makes the use of pressure gasoline feed necessary, and a motor-operated pressure pump is employed in conjunction with a hand pressure pump on the front seat heel board for initial starting. The gasoline tank capacity is 20 gallons on all model 38 cars, and the tank pressure about 2 pounds.

Springs on model 38 are semi-elliptic in front and of standard Packard three-quarter scroll elliptic type in the rear. Their width is 2 inches all around, while the front have a length of 40 inches and the rear 51 inches.

Bodies are all distinctively Packard in appearance and show no departures from those used on the other 1913 models. Most all Packard bodies are constructed

in the company's own shops and they have sheet aluminum panels over wood framework. The equipment on all bodies is most complete.

SOUTH AMERICAN FIELD

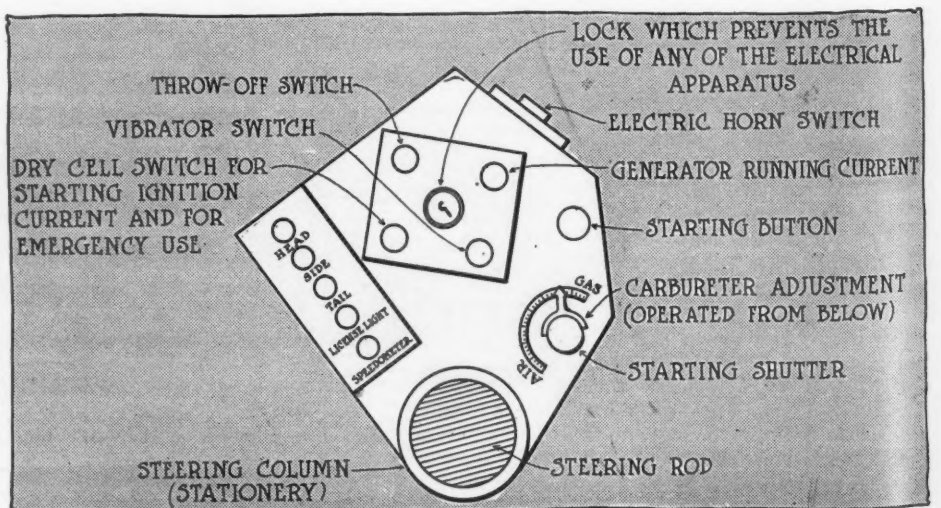
New Orleans, La., Aug. 12—European car manufacturers are securing an advantage in Latin America which is certain to cost American factories many sales. Aires and Rio de Janeiro, makers of American cars have neglected active efforts in the cities which lie south of the Rio Grande. On learning that the streets of practically all of the places were paved with cobblestones for the most part, the tendency has been to postpone any idea of propagation that may have been entertained, until better streets are constructed.

European manufacturers have adopted different tactics. They have secured high-class agents whose duty has been to stir up a desire for better streets rather than attempt to make immediate sales of cars.

The Latin Americans are filled with civic pride. They have beautified their cities with magnificent buildings and monuments but they have not made smooth streets, from the fact that they were not necessary. As a general thing small cobblestones are used, which admirably resist the heavy rainfalls of that section of the world and still provide a sufficiently good surface for the coaches, the popular vehicle of this section.

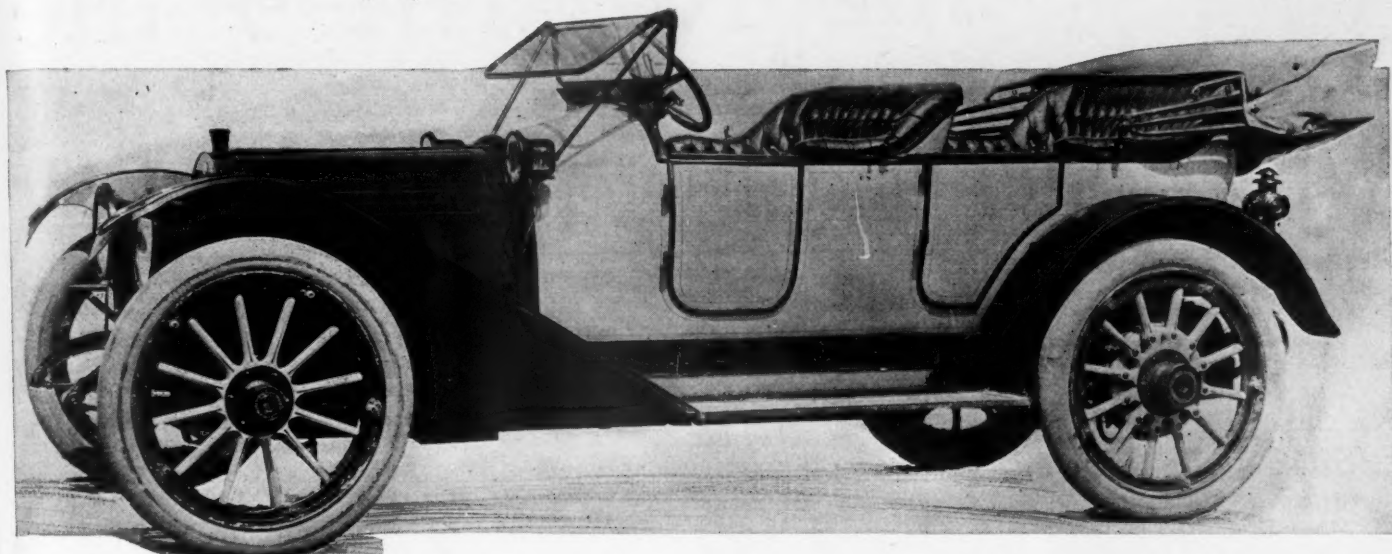
Even in the United States and in France, the two countries where road building has reached the highest development, it must be admitted that the real good roads enthusiasm followed the motor car. This same principle will apply to all of Latin America, but results are certain to be quicker. In most of the capitals of the southern republics some asphalt or other smooth surfacing material has been laid. With the business in the proper hands, agents who speak Spanish and who are familiar with the demands of Spanish business methods, a few cars should be placed with the wealthier members of the community. Pride counts for a great deal in Iberian countries, and with the move once started one family is not likely to let another of its set get far ahead, and this reason is likely to be responsible for more sales than any desire for the pleasure that may come from the use of a car. Ostentation is a characteristic more deeply inbred in Latin races than in the Anglo-Saxon, and the fact that the motor car is something new and different alone will make it popular.

There are few cities in this territory, which represents more than one-fifth of the area of the globe, that have sufficient good streets to make motoring popular, but the time is ripe for improvements along this line provided the proper encouragement is offered. With cars in the possession of a few of the influential residents it is certain to be only a short time until they are anxious to lengthen their spins and to break the monotony of the limited beat they have been forced to travel.



COMBINATION ELECTRIC STARTING, LIGHTING, IGNITION AND CARBURETOR CONTROLS ON THE STEERING COLUMN

Republic Single Chassis Retained for 1912



REPUBLIC FIVE-PASSENGER TOURING CAR FOR 1913 SHOWING HEAVY DASH COWL

CONTINUING the single chassis model of last year with refinements and more complete equipment, the Republic motor car for 1913, to be known as the series E, appears with four body types, a two-passenger raceabout having been added to the regular models. This body is mounted on the same chassis as the other types, with the exception of the wheels, which are of 34-inch size, and special gearing at the buyer's option.

The chassis shows few mechanical changes for the new year, continuing with 120 inches wheelbase, 36 by 4-inch tires and the same long 40-inch front and 45-inch three-quarters scroll elliptic rear springs. The motor is four-cylinder, $4\frac{1}{2}$ by 5, rated at 35 to 40 horsepower, of the T-head type, cast in pairs, with crankcase circulation and splash lubrication. The centrifugal type of water pump is used, a Mayo cellular radiator being used this year instead of the vertical tube type of 1912. A special Stromberg carburetor is used, with a hot air connection. The magneto formerly employed in the ignition of this car has been discarded in favor of the Delco lighting and ignition generator, which charges a set of storage batteries, from which current is taken for the lamps and for the dual ignition system, dry batteries being employed as auxiliaries.

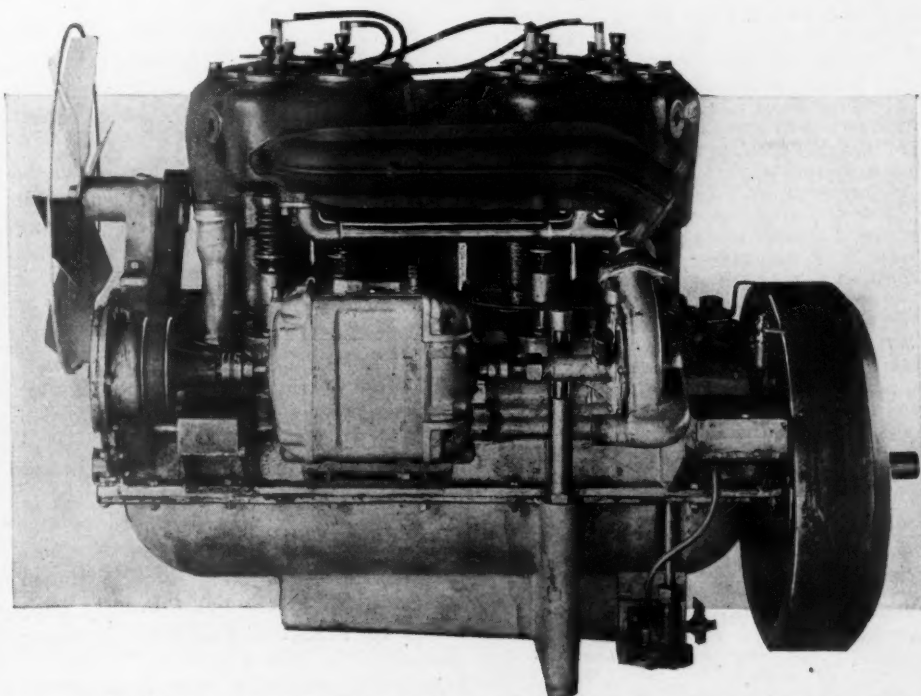
The leather-faced cone clutch appears this year with cork inserts. The gearset, as in former models, is mounted on the rear axle, which is of the floating type. Three forward speeds are provided, with center control. The steering gear is carried on the right side, and is of the worm-and-wheel type, permitting adjustment for wear by means of four entirely separate settings. It is mounted on ball bearings, with an 18-inch hand wheel. The tie-rod is carried behind and slightly

above the front axle, which is of the I-beam type, drop forged in one piece. The steering knuckles are carried on large ball bearings to facilitate ease of steering, and ball bearings are used throughout the rear axle and transmission systems, and in the front wheels.

The service brakes are of the external contracting type on the rear wheels, actuated with the usual foot pedal, the emergency brake being of the internal expanding type, actuated by a hand lever at the left of the center H quadrant of the gear-shift lever. Both brakes act on 14-inch drums through equalizers. Both a torsion tube and radius rods are fitted, and all brake connections are inside the frame.

The tires are 36 by 4 inches on all wheels, being mounted on demountable rims, one spare rim being included in the regular equipment.

As in former Republic products, the car sets very low, and while of light weight, the bodies are roomy and comfortable. The touring car lines for 1913 have been simplified in the new product; the toy tonneau, which is a four-passenger car has low tilted seats, and an abundance of front leg room; and the two-passenger roadster has an exceptionally deep cowl and a long torpedo back, which carries out the popular stream-line effect admirably. This body has a trundle emergency seat folding under the front seat and pulls out over the running board.



FOUR-CYLINDER REPUBLIC MOTOR WITH LIGHTING AND IGNITION GENERATOR

Commercial Car



Army Officer Designs Truck for Military

the small wheel will make, with correspondingly less wear.

A 32-inch wheel, for example, makes about $8\frac{1}{4}$ feet per revolution or 634 revolutions to the mile. A 40-inch wheel makes 10.42 feet per revolution and does 507 turns to the mile. One hundred and thirty revolutions or road contacts are thus saved to the tire every mile. For an equal wear of tire the 40-inch wheel can go $1\frac{1}{4}$ miles to the smaller wheel's 1 mile. Again, the larger surface in contact on the larger wheel will make the percentage more than this in favor of the greater diameter. If these things be so why have not larger wheels been adopted?

The reason is mainly a manufacturing one. Small wheels and tires cost less at first. A small wheel can be made lighter for a given strength. A wheel made twice as large as present wheels for the same strength would weigh four to eight times as much. Again, truck bodies must be wide. If wheels are made high, platforms will be high or narrow or tread too broad, so there is a limit soon reached.

However, larger wheels and tires are coming. Just how much larger is yet to be seen, but the advantage of the larger wheel is not to be denied, at least so far as lessened wear and minimum of power consumed is concerned.

It is certain that the greater economy of tires and lessened strain on the vehicle which may be obtained through the use of larger wheels will result in their more general adoption in the near future.

The increased facility with which large wheels climb from depressions in the road, and the decreased shock occasioned by impact with obstructions or drops into declivities are becoming recognized.

DESIGNS for a gasoline-propelled motor truck for military service exclusively have been drawn by Major H. J. Gallagher of Seattle, and are now in the office of the war department in Washington, D. C., for consideration. Many features are included in the conveyance conceived by the Seattle army officer that recommend it strongly as a future means of transporting troops, guns and ammunition. It is superior to many models of motor trucks intended for military use in that it makes provision for carrying rifles, shells and ammunition in addition to accommodating fourteen men. Clothing and ration space also is included in the design of the car.

An interesting feature is that the construction of the machine permits all the men to mount and dismount at the same time, obviating the delay and confusion that might be experienced in the cars where a single means of access is provided.

The gasoline tank has a capacity of 80 gallons, which will give the car a traveling radius of 400 miles, while a reserve gasoline supply can be carried conveniently. A tank for drinking water for the soldiers is included in the equipment of Major Gallagher's machine. It is detachable, making it convenient to remove it in case the car is carrying excessive weight.

The speed possible for the car is estimated at 30 miles an hour. On ordinary roads it should cover 15 miles an hour, with a day's mileage of approximately 100 miles, which is equivalent to 4 days march for cavalry and at least 5 days tramp for infantry.

The cost of a car as designed is based upon an estimate of a practical motorist, the estimate being \$2,000 each for cars

Major Gallagher of Seattle Sends Plans to War Department

for troops, \$1,200 for a machine for officers and \$1,800 for a freight truck. Assuming that a large number of cars would be purchased under contract, the cost probably would be less.

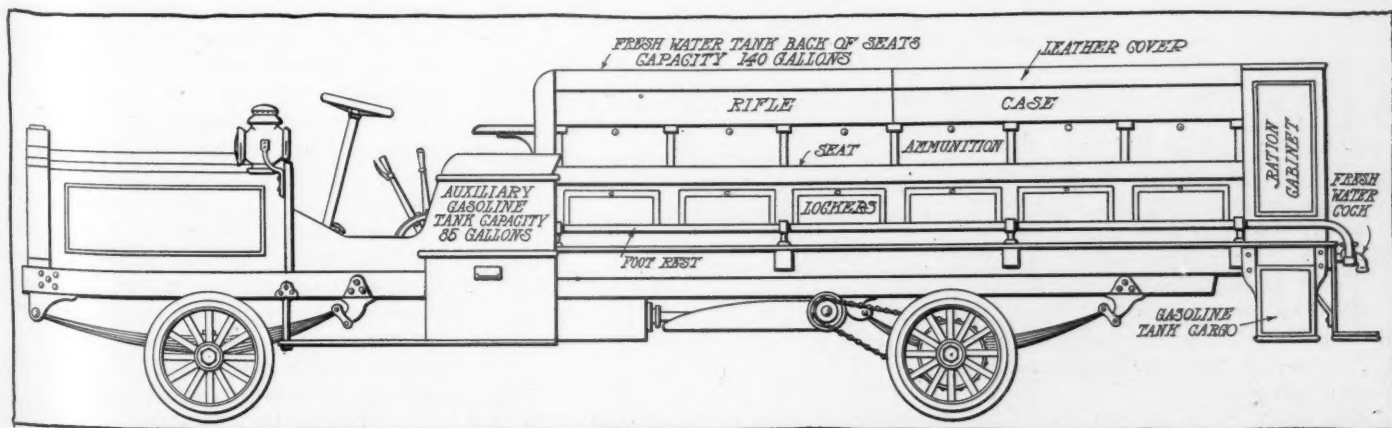
The machine is designed to carry in the lockers under the seats, which are placed back to back lengthwise, such articles and extra clothing as are now usually carried on the men's backs. There is space under the legs of the men where shelter tents and other equipment could be carried. The ration cabinet is capable of carrying 3 days' rations for the fourteen men.

One freight truck it is estimated would be sufficient for four companies in addition to the space for carrying freight on the machine. This truck would be of 6,000 pounds capacity.

As to the questions of expense and convenience, Major Gallagher has prepared figures which would make it appear that the adoption of the motor car as a means of transporting troops and ammunition would be a step toward economy, in addition to greater dispatch than is possible by horse and mule.

An estimate figured on the cost and time of transporting 140 men 100 miles by cavalry and by motor car is given herewith.

Time of marching, cavalry, 4 days	
Cost of 140 horses and equipment at \$200 each	\$28,000.00
Two four-mule teams, wagons and equipments	2,000.00
Total	\$30,000.00



MAJOR GALLAGHER'S DESIGN OF MILITARY SERVICE TRUCK

Cost of ten motor cars at \$2,000 each	20,000.00
Cost of one car for officers	1,200.00
Cost of one freight truck	1,800.00

Total	\$23,000.00
Cost of gasoline, allowing 20 gallons to each machine for 100 miles, 240 gallons at 15 cents a gallon ..	\$36.00
Cost of forage, 4 days full allowance, 12 pounds grain for each horse and 9 pounds for each mule, 14 pounds of hay for each animal; 7,152 pounds of oats at 1½ cents a pound	107.38
8,456 pounds of hay at 1 cent a pound	84.56
Total	\$191.94

These figures show a saving of \$7,000 on equipment while a healthy saving is noticeable in favor of the motor as against the horses and mules for good. A vital point in favor of the motor car is that there is not one cent of expense attached to it while the car is idle.

SUPLANTS SIXTEEN MULES

Typical of southern California, and seldom if ever seen in other parts of the United States, is a five and six mule team drawing a huge tank of crude oil on the city streets and over the country roads. This method of transporting oil soon will be a relic of the past. The motor truck is fast superseding the slower and more picturesque manner of hauling, and it will be a matter of a short time when the more modern methods will have been everywhere adopted.

One of the latest concerns to dispense with mule-driven transportation system is the A. F. Gilmore Oil Co., which supplies oil for road work from its wells in the Santa Monica district. The Gilmore company has recently purchased a 5-ton Sampson truck and has fitted it with a huge tank of 1,100 gallons capacity.

The truck is making three round trips daily from the fields to the beach cities, covering a total mileage of 60 miles a day and displacing from sixteen to eighteen animals. Figuring the upkeep of the truck against the cost of feed, harness and care of the mules necessary for the same amount of work, the difference will amount to several thousands of dollars yearly in favor of the commercial car.

The Federal Motor Truck Co., after several months of earnest investigation, has perfected a motored chemical and hose truck which it is now putting on the market. The body part is mounted on a model D chassis and is completely and handily equipped with the latest and most improved fire apparatus and with side seats to accommodate eight men, besides the two operators.

The body has space for 1,000 feet of ordinary 2½-inch fire hose, some of which is on reels for quick handling. Two 25-foot extension ladders are fastened along the body sides. A 35-gallon Badger chemical tank with connections and 200 feet of ¾-inch chemical hose is neatly fitted just back of the driver's seat. Two 5-gallon hand fire extinguishers are fastened to the left-hand running-board.

Extras are fitted as follows: Two 5-foot crowbars, one Detroit door-opener, two fire

axes, two 10-foot pike poles, four time hooks.

Above the truck bed is a wire basket for holding several hundred feet of extra hose and to which the two headlights are fastened. A powerful pivot searchlight is mounted at the center of the dashboard. Two side oil lamps, as usual, are fitted. The truck is capable of a speed of 22 miles an hour on the average—twice as fast as a horse outfit, carrying at the same time more complete equipment and more men.

DISTRICT IS MOTORIZING

Motor cars are rapidly replacing horses in the municipal service of the District of Columbia. Included in the district appropriation bill just enacted by congress are appropriations for the purchase of motor vehicles for the use of the building inspector, superintendent of sewers, electrical engineer and superintendent of street cleaning. A number of other district officials already are provided with motor cars for their official duties.

Experience has demonstrated, according to district officials, that motor cars give a greater measure of service than the horse-drawn vehicles and are operated at less cost. The policy of the district commissioners is to gradually replace the horse-drawn fire apparatus with motor-propelled engines, hose wagons and trucks.

The District of Columbia at present is the owner of two pieces of motor-driven apparatus, a fire engine and a combination fire engine and hose wagon. Provision is made in the district appropriation bill for the purchase of another combination fire engine and hose wagon at a cost not to exceed \$9,000. Bids for the purchase of this apparatus will be called for in the next few weeks.

LONDON TRAFFIC CENSUS

London is continuing to take census of traffic in different parts of the city at stated intervals. Motor Traction published in a July issue a general synopsis of such a census for every year since 1905, when motors first began to make their appearance on London streets. The count was taken in each case at Putney Bridge, a traffic center quite typical of London conditions. A short synopsis of the census follows:

	Motor Bus	Horse Bus	Motor Trucks	Horse Vans
1905	0	1,613	0	52
1906	805	1,222	0	59
1907	983	1,145	0	88
1908	817	1,078	0	50
1909	640	819	2	36
1910	1,009	80	3	50
1911	1,529	33	5	40
1912	1,745	10	8	47

The percentages of horse and motor bus traffic for the different years is as follows:

	Motor	Horse
1905	0	100
1906 .....	.39	.61
1907 .....	.46	.54
1908 .....	.43	.57
1909 .....	.44	.56
1910 .....	.93	.07
1911 .....	.98	.02
1912 .....	.994	.006

All horse buses have now been taken off the streets of London so that next year's

census will give 100 per cent motor bus traffic, just reversing the figures for 1905—a wonderful change.

One of the chief reasons for the success of the motor bus in London is the large amount of excellent pavement extending in all directions, excellently kept and ideal in surface. On these motor vehicles can operate at very low upkeep expense even on hard tires. Traffic at congested points moves much faster now that motor vehicles are so common and slow vehicles are kept strictly to the curb.

It is somewhat surprising to note the small number of motor trucks in the census, but this is due to a certain extent to the route on which the census was taken.

It is true, nevertheless, that motor trucks for London delivery have not taken near the hold that motor buses have, and probably will not for some time to come on account of traffic congestion, the slowness of British commercial methods and the lethargy which seems to descend over the average British concern and its operation when any real change in system is suggested. Present horse methods in London will not fit trucks. Hence the London firm sticks to horses.

Outside of the metropolis, however, motor vehicles are gaining rapidly and on longer hauls over the excellent country roads are in places competing directly with the railways in the handling of freight. Yet another year's census will show a considerable increase in traffic of motor trucks in London itself.

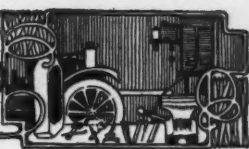
COMMERCIAL BREVITIES

Direct communication between South Bend, Ind., and Buchanan, Mich. was made possible when arrangements were completed with the Southern Michigan Railway Co. to connect with motor service at Niles, Mich. Direct connection will be made with every other train in both directions. Through tickets will be sold to all points on the northern Indiana, and southern Michigan system. The deal was made with E. B. Clark, president of the Celfor Tool Co., of Buchanan, who immediately contracted for a fifteen-passenger motor bus, which is to be delivered within a month and the service will be established immediately. A fare of 25 cents a trip will be charged between Niles and Buchanan.

A motor combination police patrol and ambulance was delivered to the Niagara Falls, N. Y. police department last week. It is a Haynes, the lower structure being built at Kokomo, Ind., while the Henry Brunn Co. of Buffalo made the body. The patrol will seat ten people and, with all accessories of an ambulance, contains first-aid paraphernalia. The roof of the new machine is mahogany while the sides and ends are of polished oak. It combines in one vehicle the functions of both a police patrol and a hospital ambulance.



The Motor Car Repair Shop



THE characteristics of the workman exhibit themselves in the work he is doing. To many owners of repair shops in connection with garages, salesrooms or branch establishments the character of the man is often given little consideration providing his technical ability is such as to insure good work. This is an error. The repair shop is annually becoming a more important factor of the branch, the salesroom or the garage. Each succeeding year finds more cars in use; there are more old cars and consequently more cars to be repaired. In proportion as the number of cars increases so that importance of the repair shop grows. In this proportion must the caliber of the head workman improve in order that the general esprit de corps of the shop improves.

The repair shop does not occupy the same position to the salesroom or branch that the vault does to the safe. It is true that the lock and key are watched religiously with many, more to keep the outside world in ignorance of the nature of repairs needed on the cars and the magnitude of the work than to any desire to keep the public out. The public may not have the right to enter a repair shop but very frequently the owner whose car is undergoing repairs wishes to visit the repair shop and he has a moral right to do so. He may want to increase his knowledge of his car, and considers it the best time to do this when the car is undergoing repairs, when the parts are separated one from another and when he has a chance rarely afforded. For the repair man to forbid such visits would be disastrous. It would be the most certain way to engender distrust in the car owner's mind. If it never had entered his mind before that the repair work was other than genuine it certainly would after such a rebuff.

No; the owner has a right to see his car while it is in the repair shop and upon the general condition of the repair shop and the general demeanor of the help he will be able to carefully estimate the caliber of the work he is having done. A mussed-up repair shop indicates a poor organizer at its head; it indicates more or less carelessness and haphazardness in the work.

Contrast two repair shops, one in which there is a place for every part that has to be removed in making a car repair and another shop in which all of the parts so removed are scattered over the entire floor, under the car, at the right side, at the left side, in front and in rear. The cluttered-up condition is expensive and it destroys confidence. Where parts are left scattered on the four corners of the floor the workman consumes energy every time

Good Repairshop Ethics

he has to stoop over to lay one on the floor as well as every time he stoops over to pick one up. The car owner pays for this and whenever a car owner visits a repair shop in such a condition he can at once conclude that he is paying for the cluttered up condition. His repair bill is higher because of this and it may be that the work is not so well done. An organized mind produces an organized job and the repairman who has not sufficient organization in his makeup to put all of the spare parts or tools in their proper places has rarely enough gray matter to do the job in the best way or with the greatest accuracy.

Consider for a moment the loss of time due to laying parts of a car on a dirty floor instead of placing them high and dry on a work bench. A part lying on the floor gets covered with dirt. This must be cleaned off before it can be replaced. To clean it may require a can of gasoline. In the modern repair shop the use of gasoline freely in the shop is not permitted; rather it is restricted to what is known as a gasoline room, this precaution being taken to guard against fire. This means perhaps several trips to clean with gasoline parts that never should have been dirtied. This adds to the repair bill and the owner pays for it. The repair shop owner also pays for it but not to so great an extent. There are scores of cases on record where small parts have been lost, due to promiscuous scattering of them on the floor and where they have not been lost they have been damaged and in some cases broken by being tramped upon or by laying other pieces on them.

In some of the European motor car repair departments the workmen are required to wear long white dusters, the garment being worn not primarily with the object to keep the workman's clothes clean but rather impressing on him the necessity of cleanliness and tidiness. The white garment produces a moral effect; it is a silent assistant, every moment suggesting to him the clean job, the clean shop and consequently the clean repair. Every factor of that nature is a good investment. In a large American car builder's branch repair shops cuspidors have been provided for every workman, special toilet facilities have been furnished and every factor used which will have an upward tendency on the repairman.

It will pay every dealer, branch manager or garage man to raise the level of the repair department, to make it a center of cleanliness, which it should be, instead of its being the opposite. The

owner will discover that better workmanship will result from such a regime, that more accurate work will result and that the efficiency of the man will be higher. He will further discover that the general expenses of the department will be reduced. There will not be so much material lost or wasted, there will not be so many heavy overhead costs, the tools will not be so abused, and in general there will be an unlooked for improvement in the general standard of the work.

But the good will not end here. The visitor will see the work and be impressed with the conditions. He will be a better customer; he will feel that he is getting more judicious service, that the work is being better done; that the parts of his car are not being lost and inferior ones put in their place; that he is not being charged for ignorant, mis-directed energy, and in fact he will feel as every other person feels when entering a well-organized shop or business house, namely, that whatever he has done or purchases will but reflect the general conditions everywhere apparent.

Repairing Honeycomb Radiators

It sometimes happens that owing to some accident or to a fault in the process of manufacture, one or two of the cells or tubes of a cellular or honeycomb radiator may spring a leak. In such cases a quick and effective repair may be made by plugging up the ends of the cells or tubes themselves with soft lead or a piece of wood whittled or cut so as to fit snugly into the ends of the cells. When plugs are used they should be driven in from the front and back of the radiator and the cut off and carefully hammered flush with the surface; or if convenient have a tin-smith solder around the edges of the lead plugs. Unless an expert one should not attempt to solder a radiator, for one is very apt to open up a few of the surrounding cells and cause more harm than good.

Radiator leaks are hard to find usually. They may be often detected by steam issuing from them, but if this is not the case, and the exact spot from which the water is escaping cannot be readily determined, the best thing to do is to remove the radiator. Plug up all the openings, such as inlet and outlet, except one, with corks or wooden plugs. Then into the opening which still remains open, place a plug through which the tube of a tire pump passes. Place the radiator in a tub of water and pump air into it by means of the tire pump. Bubbles will issue from the leak or leaks, which should be immediately marked with chalk so as to be easily located later when the radiator is removed from the tub.



From the Four Winds



ROCHESTER'S Orphans' Day—Orphans' day in Rochester, N. Y., was a great success, 762 orphans being driven in 284 cars to Ontario Beach park where the parentless children had access to every amusement on the grounds.

Prepare a Glidden Welcome—There is no abatement in the interest in New Orleans with which the pathfinders for the A. A. A. reliability tour is being watched. The list of entries to participate in the trip out from the city to meet the pathfinder is growing daily. More than 300 cars are pledged already for the welcoming trip.

Governor Dix Kicks—Owing to complaint of Governor Dix of New York state, to the highway commissioner, men will be stationed at either end of a stretch of road which is undergoing repairs. The complaint resulted from trouble the state executive had on a recent motor trip through New York. On one stretch he motored several hundred yards when he encountered workmen who had the remaining portion of the road torn up. The governor then had to turn back to take another road.

Indianapolis Posting Signs—An extensive road-posting campaign has been started in Indiana by the Hoosier Motor Club, of Indianapolis, and all of the principal highways out of that city for a distance of several miles are being provided with guide signs. Motor car manufacturers of the city are assisting by loaning test cars on certain days. At the city limits special signs are being posted telling to what cities the roads lead. The ordinary sign, telling the route to Indianapolis, is a white stripe on every tenth telephone or telegraph pole. Dangerous places are being indicated by two white stripes, each 6 inches wide.

Car Collides with Steamer—A head-on collision of a large touring car with a steamboat that was approaching to anchor at the wharf on the Arkansas river at Little Rock, established a precedent, of anything of that kind in automobile circles in this state. The steamer Grand, of Memphis, had just arrived from a trip to points up the river loaded with excursionists and was slowly swinging into the wharf to deposit its load of passengers, when the touring car came around the corner of the street that turned down the wharf and glided swiftly down the inclined slope to the water. As the car neared the steamer the chauffeur made an effort to apply the brakes, but they failed to respond and the car dashed into the water and ploughed its way to the bow of the huge steamer. Blocks and tackles were procured and the car was drawn

with its load of moistened occupants back upon dry land, while the steamer slowly slid into the dock and deposited its load as if nothing had happened.

New Indiana Club—The Newport Motor Club, of Newport, Ind., has been incorporated, receiving a charter under the voluntary association act of that state covering associations which have no capital stock. The directors named in the charter are James Barker, I. M. Casebeer and J. H. Groves.

Another Minnesota Club—One hundred motorists of Hastings, Minn., have organized a club to improve roads and promote sociability tours over these roads. Officers are: President, Captain E. C. Anthony; vice-president, A. M. Adsit; secretary, A. N. Gergan; treasurer, John Heinen.

Clubhouse on Mountain—Alabama capitalists have taken over 253 acres of land on the top of Lookout Mountain and will establish a motor club. A speedway will be laid out at once and a clubhouse built. This is expected to become one of the meccas of the motor tourists of the north and south. Louis Hart, of Gadsden, Ala., is the moving spirit in the enterprise.

Ohio Road Work—According to a recent report of the Ohio state highway commission, there is 72 miles of roadway under construction by the state. The 72 miles of roadway is located in thirty-one counties and will be completed by September 15 at a cost of \$659,930. August 22 the state highway commission will award contracts for the improvement of \$170,000 worth of roads located in many sections of the state.

Canadians Elect—At the annual meeting of the New Brunswick Automobile Association T. P. Regan was elected president and W. C. Cross vice-president. The election of the secretary was laid over until the arrival of the president, who is now in New York. The board of governors was appointed as follows: J. Fraser Gregory, Dr. G. A. B. Addy, J. Royden Thompson, R. D. Patterson, Fred McGee, of Elgin; F. A. Sumner, Mocton, and George W. Fowler, of Sussex.

Penn Orders 1913 Tags—Dark olive green for a background, with letters in white, is the color combination decided upon for Pennsylvania motor tags for next year by State Highway Commissioner Edward M. Bigelow. Bids for 75,000 license plates will be asked for. These are to be furnished by November 1, 1912. The announcement that next year's tags must be furnished by November 1 is an innovation, the date being set considerably earlier than in previous years. This is due to the fact that for weeks before the close

of the year the department gets hundreds of applications for tags for the coming year.

Minnesota Registrations—For the first 6 months of 1912 the registration of motor cars with the secretary of state at St. Paul, Minn., reached 26,000, 4,000 motorcycles, 3,000 chauffeurs and 243 dealers, with receipts of \$55,000.

Wants Senator to Contribute—The Kenosha Automobile Club, of Kenosha, Wis., has asked United States Senator Isaac Stephenson, the millionaire junior senator from Wisconsin, to renew his offer, made in 1902, that he will give \$10,000 for highway construction in Kenosha county if the county will duplicate the amount. The senator owns an immense stock farm near Kenosha. The club proposes to raise \$5,000 if the county will appropriate an equal amount in case the senator renews the offer.

To Post Minnesota Road—Road signs similar to those used by the Automobile Club of Minneapolis are being built under the supervision of the road signs committee of the club to be placed along the 228-mile road between Minneapolis and Watertown, S. D. One-fourth of the cost of a sign for every 4 miles is to be paid by the club and the rest by other towns on the road. The highway is the Minneapolis connection with the Meridian road. To celebrate the opening of the road Watertown is organizing a run to Minneapolis with about 150 participants.

Bison's Country Home—The Automobile Club of Buffalo's country clubhouse at Clarence, N. Y., which was constructed at a cost totalling \$75,000, is said to be the finest country home owned by any motor organization in the United States. The estate on which the clubhouse is located comprises 70 acres on which are stately pine and hickory trees as well as apple trees and shrubbery. The clubhouse is approached from the main highway by broad, smooth road leading directly to arched driveway. The building itself, which is 200 feet long by 136 feet at greatest width, is of mission architecture and represents a spacious bungalow. The general reception room on the first floor has seating capacity for 500 people. This room is finished in weathered oak, unpolished, with vaulted ceilings and five fireplaces of red brick to hold large logs. On the second floor also is a large, comfortable smoking room. The dining service at the clubhouse consists of eight private dining rooms. The entire structure is encircled with broad verandas, 14 feet in width. On the concrete terrace adjoining the south side of the clubhouse is an additional seating capacity for at least 500 people. The lawns surrounding

the country home are converted into tennis courts, golf links and general recreation grounds. From the verandas can be seen a small lake which is about 100 feet distant.

Testing Truck Tax Law—License Inspector A. B. Gray has begun a test of the Minneapolis ordinance requiring a tax of \$1 for each motor truck used for hire. Several chauffeurs have been arrested on the charge of not having paid the tax, and trials are set for future dates.

Louisiana After Money—The Louisiana tax commission has recommended a state tax on motor cars in addition to the \$5 yearly tax that it is allowed municipalities to assess. The amount of the tax probably will be left to the legislator who may present the bill covering the question.

Albuquerque Building Speedway—A 20-mile motor speedway is being constructed on the mesa 10 miles east of Albuquerque, N. M. The whole circuit, as well as the city and valley below, can be seen from one point at the foot of the Sandia mountains. A 25-horsepower steam roller precedes the Dillon motor road drag. In the rear of the drag is hitched a heavy wagon with 6-inch tires, which packs down the tracks made by the two points of the drag, producing an ideal road.

Clear Salamanca—A committee composed of Harry Thorp Vars, and Dai H. Lewis, president and secretary, respectively, of the Automobile Club of Buffalo, N. Y., and O. E. Yeager, president of the Victor Motor Truck Co., Buffalo, recently investigated the so-called speed-trap conditions at Salamanca, N. Y., and the result of their inspection is a vindication for the Salamanca Automobile Club. The Buffalo committee ascertained that certain motorists had been arrested and fined for violating the ordinance but that no speed trap exists at that town. About a year ago the town filed with the secretary of state a copy of an ordinance

limiting speed to 15 miles an hour, but it has been lenient until recently when two serious accidents occurred, this leading to a revival of the strict ordinance.

Grand Rapids Wants Wheel Tax—Because the use of motor-driven apparatus has increased the repair cost of the streets, a wheel tax is proposed for Grand Rapids, Mich., if an ordinance to provide for such legally can be passed.

Cars Hurt Railroad Traffic—Agents of the Wabash railroad say that the growing number of motor cars is affecting the passenger revenue of the railroads. On a central Illinois branch into Champaign the ticket sales have declined 50 per cent during the past year or two.

Up to the Dealers—The question whether the Automobile Club of Washington is to have a reliability tour will be settled by the dealers. Rudolph Jose, captain of the club, intends to call a meeting of the dealers about Aug. 19 to vote on the proposition. A 3-days' run was scheduled for June, but owing to a lack of entries it was postponed until September. As the dealers are the only people interested in contests in this section, it is the intention of the club to put the matter squarely up to them. If the dealers vote to hold the run the club will promote it.

Schenectady Awakens—For the first time in 5 years the Schenectady Automobile Club held a meeting in Schenectady, N. Y., last week at which officers for the ensuing year were elected. Those chosen were: President, Charles H. Benedict; treasurer, James W. Yelverton; secretary, Benjamin A. Burtiss; assistant secretary, W. J. Fallon. The meeting was held at Hotel Edison, where it was decided to open headquarters for the local organization. Assistant Secretary Fallon was appointed manager of the touring bureau to be opened in a few days. A membership campaign is to be conducted. Every road in Schenectady county is to be labeled with handsome enameled signs,

costing \$1.25 each. The sum of \$350 in the organization's treasury has been appropriated for this purpose.

Motor Firemen Win Cup—For having in line at the parade at Rochester, N. Y., of the Western New York Volunteer Firemen's Association, the finest motor fire apparatus of the numerous hose companies from that section, the Dye Hose Co., of Albion, N. Y., was awarded first prize. The apparatus that took first honors is the Thomas-Victor combination chemical and hose wagon.

Western Road Boomers Busy—The third of the good roads boosting trips of the Omaha Commercial Club came to an end, when the car driven by H. E. Frederickson, chairman of the club's county road committee, reached Salt Lake, early last week. It was announced at the banquet given at Salt Lake to the party, that members of the Salt Lake City Commercial Club would go in a car, on to the coast. Further it was voted to name the route the Omaha-Salt Lake pioneer trail.

Motorist Drives Hogs—It is necessary to get out into the rural districts to learn the real utility of a motor car. That the car of modern make is good for almost anything was demonstrated when Mark Howell, a farmer of near Ipava, drove a bunch of thirty-eight hogs to town, herding them in his car and as successfully as by the old method of following on horseback or in a wagon. On the way one of the fattest of the porkers played out and was unable to walk any farther. Howell, with the aid of a neighboring farmer, lifted the weary one into the car and hauled it to town.

Politician's Motor Expense—In a sworn statement filed with the county clerk of Harris county, Texas, as required by law, Jake F. Wolters, who was defeated in the recent Democratic primaries for endorsement by that party for United States senator, makes the declaration that during the campaign just closed he traveled 16,300 miles in Texas in a motor car owned by himself at a cost of \$856.65. This includes the cost of gasoline, garage charges, repairs and other incidental expenses of the remarkable canvass. It represents an outlay of a trifle more than 5 cents per mile for the 16,300 miles. The motor car trip occupied about 4 months.

Find Good Sand for Roads—Local, state and government officials are making exhaustive tests of a peculiar sand formation in the vicinity of Waupaca, Wis., which is said to be particularly good for use in laying concrete roads. The material is a torpedo sand, which when screened is said to be better than the finest sands yet encountered in the middle west for this work. The 2 miles of concrete road built by Winnebago county into the city of Neenah, and the 4 miles between Fond du Lac and Oshkosh, Wis., contain this sand and the surface of the pavement is claimed to be smoother and hold better wearing qualities than any other pavement of this type.



NEW COUNTRY HOME OF AUTO MOBILE CLUB OF BUFFALO



Current Motor Car Patents

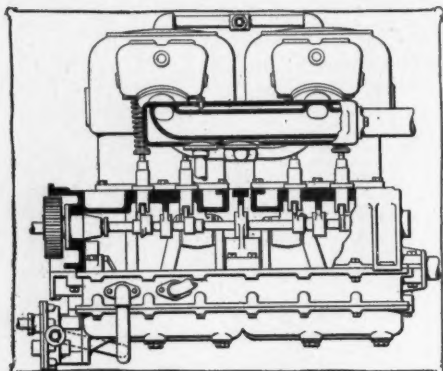


FIG. 1—PACKARD COOLING SYSTEM

PATENTS ISSUED AUGUST 6, 1912

1,034,414—Wheel. Thomas G. Briggs, Lexington, N. C. Filed May 19, 1911. Serial No. 623,511.

1,034,423—Vehicle Top Raiser. George W. Christopher, Elizabeth, N. J., and William Chas. L. Evans, New York, N. Y. Filed December 20, 1911. Serial No. 666,879.

1,034,438—Spring Wheel. William L. Fulton, Jr., Savannah, Ga. Filed July 28, 1911. Serial No. 641,064.

1,034,451—Rotary Gasoline Engine. Henry Hendricks, Alton, Ill., assignor of one-half to Fred R. Hendricks, Alton, Ill. Filed April 22, 1911. Serial No. 622,666.

1,034,453—Clutch. Lindley D. Hubbell, Hartford, Conn., assignor to the Pope Manufacturing Co., Hartford, Conn., a corporation of Connecticut. Filed July 24, 1906. Serial No. 327,571.

1,034,464—Motor Car. Harold H. Kenney, Indianapolis, Ind., assignor to the Waverley Co., Indianapolis, Ind., a corporation of Indiana. Filed June 19, 1911. Serial No. 634,101.

1,034,468—Tire for Motor Car Wheels. Heinrich Knoch, Adlershof, near Berlin, Germany. Filed March 4, 1911. Serial No. 612,298.

1,034,475—Resilient Vehicle Wheel. Marius Mathiesen, San Antonio, Tex. Filed March 19, 1912. Serial No. 684,705.

1,034,497—Elastic Suspension Device for Motor Cars. Francesco Pagliano, Turin, Italy. Filed November 23, 1910. Serial No. 593,833.

1,034,509—Universal Joint. Karl F. Ranger, Battle Creek, Mich. Filed May 21, 1909. Serial No. 497,394.

1,034,514—Clutch. John James Rufe, Doylestown, Pa. Filed September 6, 1911. Serial No. 647,803.

1,034,524—Spring Wheel. Charl Sjögren, Westington Springs, S. D. Filed April 10, 1912. Serial No. 689,840.

1,034,530—Signal Horn. Ira E. Stump, Cleveland, Ohio, assignor to Hugh Pease, Lakewood, Ohio. Filed May 18, 1911. Serial No. 627,963.

1,034,531—Signal Horn. Ira E. Stump, Cleveland, Ohio, assignor to Hugh Pease, Cleveland, Ohio. Filed August 12, 1911. Serial No. 643,687.

1,034,534—Shield for Automobiles. Almer B. Thomas, Hardwick, Vt. Filed December 14, 1910. Serial No. 597,290.

1,034,536—Lamp. Francis H. Tobias, New York, N. Y. Filed October 23, 1911. Serial No. 656,086.

1,034,543—Starting Crank for Hydrocarbon Engines. Alex M. Walstrom, Minneapolis, Minn. Filed August 31, 1911. Serial No. 647,110.

1,034,549—Gas Engine. Charles White, Baltimore, Md. Filed September 27, 1911. Serial No. 651,603.

1,034,550—Steering Device for Traction Engines. Charles S. Whitworth, Cedar Fall, Iowa. Filed November 2, 1911. Serial No. 658,109.

1,034,551—Vehicle Spring. Charles H. Wilcken, Monarch, Wyo. Filed July 14, 1911. Serial No. 638,530.

1,034,559—Starting Device for Internal Combustion Engines. Charles G. Adsit, Detroit, Mich., assignor of one-fifth to Sidney B. Winn, one-fifth to George H. Brown, one-fifth to Charles H. Land, Jr., and one-fifth to Nathan H. Jewett, Detroit, Mich. Filed June 2, 1911. Serial No. 630,863.

1,034,561—Electric Distribution System. Vincent G. Apple, Dayton, Ohio. Filed April 23, 1906. Serial No. 313,270.

1,034,562—Lamp. Vincent G. Apple, Dayton, Ohio. Filed July 10, 1911. Serial No. 637,670.

1,034,579—Brake. Alanson P. Brush, Detroit, Mich., and Walter C. Baker, Lakewood, Ohio. Filed September 17, 1908. Serial No. 453,421.

1,034,583—Induction Coll. John F. Cavanagh, Providence, R. I., assignor of three-fourths to Lindsley & Allen Electric Co., Providence, R. I., a corporation of Rhode Island. Filed April 19, 1909. Serial No. 490,721.

1,034,596—Electric Switch. Paul Druseltdt, Remscheid, Germany. Filed December 30, 1911. Serial No. 668,604.

1,034,612—Lubricator. Max Glass, Vienna, Austria-Hungary. Filed October 14, 1911. Serial No. 654,804.

1,034,634—Shock Absorber. George Cushing Martin, Los Angeles, Cal. Filed July 7, 1909. Serial No. 506,407.

1,034,635—Motor Car Extricator. Henry S. McCall, Ogeechee, Ga. Filed February 20, 1912. Serial No. 678,821.

1,034,645—Electric Ignition Device. Henry Joseph Podlesak, Chicago, Ill. Filed March 25, 1910. Serial No. 551,546.

1,034,673—Gas Engine. Baxter M. Aslakson, Salem, Ohio. Filed January 12, 1910. Serial No. 537,616.

1,034,679—Wind Shield. Edward J. Beseman and Frederick Nichols, Los Angeles, Cal.; said Nichols assignor to said Beseman. Filed June 19, 1911. Serial No. 634,134.

1,034,682—Rotary Engine. William C. Bosley, Houston, Tex. Filed February 3, 1910. Serial No. 541,755.

1,034,686—Headlight. Frank Buchanan, Dayton, Ohio. Filed February 26, 1907. Serial No. 359,476.

1,034,694—Clutch. Kenneth Crittenden, Detroit, Mich. Filed July 12, 1910. Serial No. 571,549.

1,034,707—Valve for Internal Combustion Engines. William Henry, Philadelphia, Pa. Filed June 7, 1905. Serial No. 264,161.

1,034,708—Valve for Internal Combustion Engine. William Henry, Philadelphia, Pa. Filed September 18, 1907. Serial No. 393,474.

1,034,720—Spring Cushion Tire. Neill McQueen, Ludowici, Ga. Filed December 14, 1910. Serial No. 597,384.

1,034,728—Water Cooling System for Hydro Carbon Engines. James Ward Packard, Lakewood, N. Y., assignor, by mesne assignments, to Packard Motor Car Co., Detroit, Mich., a corporation of Michigan. Filed October 23, 1906. Serial No. 340,238.

1,034,732—Engine. James H. Pierce, Bay City, Mich., assignor of one-half to James H. Budd, Wilmington, Del. Filed September 18, 1911. Serial No. 649,811.

1,034,733—Keyless Motor Car Clock. James R. Putnam, Waterbury, Conn., assignor to Waterbury Clock Co., Waterbury, Conn., a corporation. Filed January 9, 1912. Serial No. 670,173.

1,034,736—Spring Wheel. Herschel A. Schermerhorn, Shabbona Grove, Ill. Filed January 25, 1912. Serial No. 673,336.

1,034,739—Fluid Clutch. Alvin H. Shoemaker, Portland, Ore., assignor of two-thirds to Albert Cleveland and E. A. Tyroll and one-third to J. W. Hurley, Portland, Ore. Filed September 11, 1911. Serial No. 648,811.

1,034,740—Fluid Clutch. Alvin H. Shoemaker, Portland, Ore., assignor of two-thirds to Albert Cleveland and E. A. Tyroll and one-third to J. W. Hurley, Portland, Ore. Filed December 12, 1911. Serial No. 665,393.

1,034,745—Pneumatic Tire. Smile Weil, New Orleans, Pa. Filed May 22, 1911. Serial No. 628,808.

1,034,769—Motor Vehicle. Charles E. Duryea, Reading, Pa. Filed September 17, 1908. Serial No. 453,501.

1,034,778—Starting Device for Explosive Engines. William J. Foster, New York, N. Y. Filed February 25, 1911. Serial No. 610,672.

1,034,814—Rim Structure. Neill McQueen, Ludowici, Ga. Original application filed November 3, 1910. Serial No. 585,150. Divided and this application filed December 17, 1910. Serial No. 597,969. Renewed July 3, 1912. Serial No. 707,611.

1,034,835—Spark Mechanism for Internal Combustion Engines. Lewis T. Rhoades, Mont Clare, Pa. Filed March 15, 1911. Serial No. 614,579.

1,034,845—Clutch. Cecil Hamelin Taylor and Howard E. Coffin, Detroit, Mich., assignors to Hudson Motor Car Co., Detroit, Mich., a corporation of Michigan. Filed August 22, 1910. Serial No. 578,428.

1,034,847—Vehicle Wheel. Paul Isidore Viel, Paris, France. Filed November 7, 1910. Serial No. 590,992.

1,034,871—Power Transmission Gearing. Leon J. Campbell, Chicago, Ill., assignor to James T. Healy, trustee, Chicago, Ill. Filed April 27, 1912. Serial No. 693,550.

1,034,873—Headlight. William Churchill, Corning, N. Y. Filed November 25, 1910. Serial No. 594,015.

1,034,874—Device for Removing Valve Springs. George F. Clark, Daytona Beach, Fla. Filed January 31, 1912. Serial No. 674,495.

1,034,877—Rotary Valve for Explosion Engines. Howard E. Coffin and Guido G. Behn, Detroit, Mich., assignors, by mesne, assignments, to the Reynolds Motor Co., Detroit, Mich., a corporation of Michigan. Filed June 27, 1910. Serial No. 569,064.

1,034,899—Folding Top for Vehicles. Traugott Golde, Gera, Germany. Filed February 27, 1911. Serial No. 611,022.

1,034,900—Vehicle Hood. Traugott Golde, Gera, Germany. Filed August 3, 1911. Serial No. 642,120.

1,034,901—Vehicle Hood. Traugott Golde, Gera, Germany. Filed August 4, 1911. Serial No. 642,255.

1,034,902—Hinged Vehicle Hood. Traugott Golde, Gera, Germany. Filed August 4, 1911. Serial No. 642,256.

1,034,903—Hinged Vehicle Hood. Traugott Golde, Gera, Germany. Filed August 8, 1911. Serial No. 642,920.

1,034,904—Hinged Vehicle Hood. Traugott Golde, Gera, Germany. Filed December 26, 1911. Serial No. 667,578.

1,034,905—Hinged Vehicle Hood. Traugott Golde, Passaic, N. J. Filed February 15, 1912. Serial No. 677,709.

1,034,906—Hinged Vehicle Hood. Traugott Golde, Passaic, N. J. Filed February 15, 1912. Serial No. 677,710.

1,034,907—Traction Machine. Sidney A. Grant and Lewis C. Grant, Thompsonville, Conn. Filed October 20, 1911. Serial No. 655,722.

1,034,942—Resilient Metal Tire for Vehicle Wheels. Frank W. Wieber, Colorado Springs, Colo.; Charles J. Wieber, executor of said Frank W. Wieber, deceased. Filed April 17, 1911. Serial No. 621,680.

1,034,956—Four Wheel Drive. Erick P. Bergman and Hal Clarke, Cherokee, Okla., assignors of one-eighth to Sydney R. Roth, Cherokee, Okla., and one-eighth to Russell N. McConnell, Oklahoma, Okla. Filed May 10, 1911. Serial No. 628,269.

1,034,966—Tire. Herman A. Brandenburger, St. Louis, Mo. Filed July 24, 1911. Serial No. 640,296.

1,034,975—Resilient Wheel. Zehner D. Butts, Cleveland, Ohio. Filed September 21, 1911. Serial No. 650,658.

1,034,980—Spring Wheel. John F. Cocowitch, Dunnellon, Fla., assignor of one-half to James G. Baskin, Dunnellon, Fla. Filed September 21, 1910. Serial No. 583,054.

1,035,004—Vehicle Wheel. Thomas Arthur Hargraves and Edward James McCord, Belfast, Ireland, assignors of one-third to Thomas Sterling, Belfast, Ireland. Filed August 5, 1911. Serial No. 642,503.

1,035,040—Change Speed Gear. Charles J. Paulson, Brooklyn, N. Y., assignor to Albert J. Nothaker, Brooklyn, N. Y. Filed February 8, 1912. Serial No. 676,216.

1,035,048—Automobile Trunk. James M. Pritchett, Vincennes, Ind., assignor of one-half to James V. Smith, Vincennes, Ind. Filed December 2, 1911. Serial No. 663,492.

1,035,052—Spring Tire. Charles P. Roster, Boulder, Colo. Filed July 22, 1911. Serial No. 639,906.

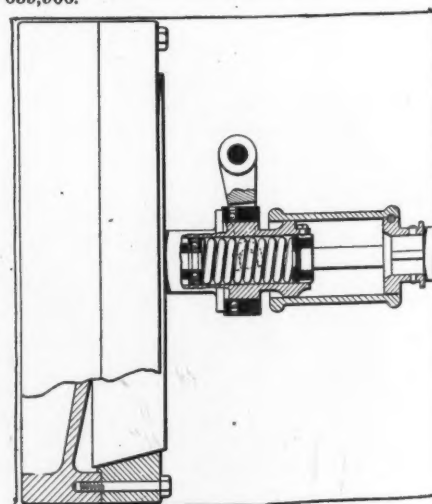


FIG. 2—POPE CLUTCH

1,035,058—Spring Wheel for Motor Cars and Other Vehicles. Winston Stephens, New Bedford, Mass., and Horace M. Gaston, Newport, R. I. Filed November 2, 1910. Serial No. 590,383.
 1,035,076—Variable Speed Gearing. Creed Raymond Boucher, U. S. Navy. Filed December 8, 1911. Serial No. 664,638.
 1,035,078—Resilient Tire for Vehicle Wheels. William W. Broga, Springfield, Mass. Filed February 1, 1910. Serial No. 541,234.
 1,035,085—Speed Indicator. Victor L. Cross, Plattsburg, N. Y. Filed May 23, 1910. Serial No. 562,931.
 1,035,091—Starter for Motor Car Engines. George Hartwell Kelley, Gainesville, Fla. Filed July 21, 1911. Serial No. 639,816.
 1,035,112—Traction Wheel. James Beard, Veterans' Home, Cal. Filed April 29, 1911. Serial No. 624,010.
 1,035,123—Cushion Tire for Wheels. Neill McQueen, Ludowici, Ga. Filed October 3, 1910. Serial No. 585,150.

Clutch No. 1,034,453—Lindley D. Hubbel, Hartford, Conn., assignor to the Pope Mfg. Co., Hartford, Conn. Filed, July 24, 1906, dated August 6, 1912. Of the inverted cone type, this clutch consists of a flywheel, composed of two transverse sections, the forward section of which is secured to the driving shaft, the rear section being bolted to the front section. The interior surface of the rear or clutch section is beveled inversely, at a bevel to correspond with the bevel of a cone disposed within the wheel, and bearing, when engaged, upon the inverse bevel of the clutch member of the wheel. Terminating in a sleeve, this inner cone is adapted to slide into and out of such engagement as directed by the position of an annular ball thrust bearing, controlled by suitable connections, which seats against a collar on the sleeve. This sleeve extends rearward, telescoping within a hollow cylinder secured to the driven shaft. Within this sleeve is a coil spring which is seated at its rear end against an integral attachment to the sleeve, and at its forward end against a ball thrust bearing secured to a rod, disposed within the spring and secured to the driven shaft in such a way that the tension of the spring exerts a pressure on the sleeve and cone adapted to engage the latter with the bevel on the wheel. This clutch is shown in Fig. 2.

It is especially noteworthy in that it is of extreme simplicity and of liberal size. As is the case with this type, the control is simple and direct.

Packard Cooling System, No. 1,034,728—James Ward Packard, Lakewood, N. Y., assignor, by mesne assignments, to Packard Motor Car Co., Detroit, Mich. Filed October 23, 1906, dated, August 6, 1912. Relating to a water cooling system, this patent applies to a circulation of water about the engine bearings, and about the exhaust manifold. The order of circulation is from the cylinder jackets through the exhaust manifold jacket, to the bearing passages, and out through concealed passages in the crankcase to the radiator. The object of this arrangement is twofold. The circulation of water about the bearings is for the purpose of keeping them cool, while the manifold is water jacketed for the same reason, and to maintain the water at a warm temperature in weather when it would otherwise

freeze. This construction furthermore would exert a tendency towards preventing muffler explosions, through cooling the exhaust. A feature of distinct novelty, set forth in the claims, consists of a valve, which directs the water from the cylinder jacket into the exhaust passage itself, and another valve to admit water from the exhaust jacket into the exhaust passage direct. This system has not yet been applied to the Packard motor. It is shown in Fig. 1.

Clutch, No. 1,034,845—Cecil Hamelin Taylor and Howard E. Coffin, Detroit, Mich., assignors to the Hudson Motor Car Co., Detroit, Mich. Filed August 22, 1910, dated August 6, 1912. Of the multiple disk type, this clutch consists of three shafts, a driving shaft, a driven shaft, and an intermediate shaft. The latter telescopes with each of the former, being loose on the first, and in telescopic engagement with the latter. Within the former at the end of the intermediate shaft is a coil spring which bears against

the end of the latter. Mounted upon the intermediate shaft is a clutch assembly consisting of a plurality of disks engaging by means of inner lugs with corresponding axial grooves in the inner clutch drum, which is secured to the intermediate shaft.

Alternating with these disks is a series of approximately the same number of disks of substantially the same size, but with lugs on their exterior edges, engaging with the exterior case of the assembly by means of a series of bolts, which serve to secure the back plate of the assembly to the main housing, making it substantially oil-tight. Connecting with the inner drum is a sliding engagement collar adapted to control for the purpose of allowing the disks to come into contact, or to separate them. Contact is secured by means of the spring disposed within the hollow recess of the driving shaft, which bears on the end of the supplementary clutch shaft through a ball thrust bearing. It is shown in Fig. 3.



Manual for Body Draughtsmen

MOTOR car body draughtsmen are confronted with problems and perplexities that are to a certain degree peculiar to their calling. The development of the motor car has brought forth features of design in coachwork, etc., that require special handling, and to the end of assisting those employed in this work to more easily compass its difficulties by a thorough knowledge of the practical application of its underlying principles, as well as to assist ambitious shop mechanics in acquiring the training necessary to better their positions, R. B. Birge and Hugh M. Sargent, have prepared a manual on this subject. They are experts in this class of work, and have had extensive experience in its instruction. A thorough groundwork of definitions and terms of plane geometry in its application to vehicle design is given, and a number of useful draughting-room kinks, to prepare the reader for the practical work of laying out projections in design. The principle, construction and projection of joints, miters, dihedral angles, etc., is next fully explained, before entering into actual examples of design. Much space is devoted to elements of design and projection of motor car coachwork, mudguards, dashes, etc., illustrated with complete and partial designs prepared by the authors. A quick and simple method of perspective drawing of vehicles is given and illustrated, that should clear up a difficult problem for many draughts-

men. Further discussion is given to colored drawings of motor cars, and miscellaneous problems such as glass framing, the framing of doors, and the making of working draughts.

Ware Brothers, Philadelphia, are the publishers. The book is bound in strong red cloth, 9½ by 12 inches, and printed on good quality glazed paper, being well within the reach of any, at the price of \$2 net.

Penal Servitude

In connection with the good roads movement, "Penal Servitude," by E. Stagg Whitin, should prove of value to students of its problems. Professor Whitin is general secretary of the national committee on prison labor, and speaks with unquestioned authority. The volume deals scientifically with the problem in all its aspects, and it is appended with a digest of the platforms of political parties, the opinions of twenty-eight state governors, as expressed in their messages, miscellaneous reports and the laws of all the states, in their bearing on penal servitude. The work is published by the National Committee on Prison Labor of New York, and contains 162 pages of interesting and authoritative matter, well illustrated with half-tones and diagrams.

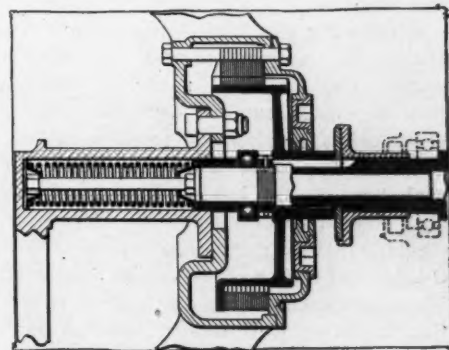


FIG. 3—HUDSON CLUTCH

CONSIDERING Moving—The Muskegon Piston Ring Co., now manufacturing motor specialties at Muskegon, Mich., is considering the removal of its plant to Muskegon Heights.

Velie Loses Lloyd—George H. Lloyd, sales manager of the Velie Motor Vehicle Co. since its incorporation in 1908, has resigned his position. He has not decided definitely on future plans.

Chevrolet After Another Plant—It is reported on good authority that the Chevrolet Motor Co. has purchased the Imperial Wheel Works plant in Flint, Mich., and will open a factory there on September 1. This factory has been secured as a branch plant to the Detroit factory and it will be used for the manufacture of the motors for the new Chevrolet cars.

Champion Expanding—Work has been begun on an addition to the plant of the Champion Ignition Co. at Flint, Mich. At the present time the company is supplying about eighty-six manufacturers of cars with spark plugs, and the number will be increased to 120 within the next 2 months. The company employs about 120 persons, of whom about eighty-five are women.

Keeton Locates in Canada—The Keeton Motor Car Co. recently concluded arrangements for the formation of a Canadian company, the Keeton Motors, Limited, and a factory has been secured at Brantford, Ont. The Keeton Motors, Limited, is incorporated for \$200,000, all paid up, and is backed by members of the Verity Plow Co., which is part of the Massey-Harris company. Another heavy stockholder is J. D. Detweiler, of the Steel Co. of Canada. The Canadian plant has about 30,000 square feet of floor space and will have capacity of 350 cars per year, taking care of the Canadian, English and Australian business.

Pharis Buys Newark Factory—The Pharis Brothers Rubber Co., of 121 East Gay street, Columbus, O., has closed a deal for the purchase of the Newark Tire and Rubber Co., of Newark, O., and will remove the plant to Columbus as soon as a suitable location is secured. The Pharis Brothers company has been selling the Pharis tire manufactured by the Mansfield Tire and Rubber Co., of Mansfield. The Newark company's tire will be manufactured and sold under the name of the Pharis in the future. The company expects to employ 100 men.

Service for Gas Tank Users—The Prest-O-Lite Co. announces that its various service stations stand ready to examine free of charge any gas tank line that is suspected of leaking and to show to owners how to deliver the full capacity of each tank to the lamps. Free service is also given in making any needed adjustments on the Prest-O-Starter, the Prest-O-Lite and other Prest-O-Lite products. These service stations are now in operation in Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Dallas, Denver, Detroit, Indianapolis, Jack-

Among the Makers



NEW CANADIAN PLANT OF SCHACHT COMPANY

sonville, Kansas City, Los Angeles, Memphis, Milwaukee, Minneapolis, New Orleans, New York, Omaha, Philadelphia, Pittsburgh, Providence, St. Louis, St. Paul, San Francisco and Seattle.

Havers Buys a Plant—The Havers Motor Car Co. has purchased the Studebaker Corporation's E-M-F factory at Port Huron, Mich. The consideration has not been made public. The Havers company is making extensive preparations for a greatly increased output and this is the first concrete evidence of its expansion policy. The Studebaker Corporation in selling this plant has done so for the reason that it desires to make all its model 30 cars at the one plant in Detroit.

Duplex Board Re-elected—At the annual meeting of the stockholders of the Duplex Power Car Co., of Charlotte, Mich., the officers who have been acting for the last year were re-elected as follows: President, Frank P. Town; vice-president, Frank King; secretary, W. G. Wisner; treasurer, C. S. Brown. The directors are: The officers except Mr. Brown, and J. H. Brown, Robert Donovan, Bert Taylor and M. J. Lampson.

In Receiver's Hands—The Barndt & Johnston Auto Supply Co., which has been operating a plant in South Columbus, O., for a number of years, was thrown in the hands of Fred W. Herbst as receiver upon the application of the City National Bank of Columbus, which claimed to be unable to collect a judgment of \$5,000 against the corporation. The officials of the company did not oppose the action, although they contended the concern is solvent. It is alleged that bills receivable more than offset the debts of the concern and that \$200,000 worth of business is on the books. The

plant will be continued in operation under Charles Barndt and W. R. Johnson as managers. The petition was one of the results of the death of Dr. L. M. Early, a heavy stockholder in the company.

Engine Company Growing—The Mason Motor Co., of Flint, Mich., after a year of business, has found it necessary to add 15,000 square feet of space to its present plant. The fiscal year of the company closes September 1 and it is expected that by that time 2,500 motors will have been turned out. The company manufactures motors for the Little Motor Co.'s cars.

To Increase Oakland Output—That the Oakland Motor Car Co., of Pontiac, Mich., will turn out 11,500 cars next season is the announcement made by George E. Daniels, vice-president and general manager of the company. To provide for this increase in output a number of factory additions will be made, providing in all for 300,000 square feet of additional space.

Fisher Wants Road Fixed—Carl G. Fisher and James A. Allison, owners of the Prest-O-Lite Co. and promoters of Speedway, the horseless city, have called on city officials demanding that they keep a promise made some months ago that a paved roadway would be provided connecting the paved streets of the city with the Crawfordsville road. The Prest-O-Lite Co. is building a new plant at Speedway, which is located on the Crawfordsville road. At present there is one bad stretch which makes it almost impossible to reach Speedway by road several months in each year. The city officials have promised to take up the matter immediately and if it is found impossible to provide a paved street this year, temporary repairs to provide a passable road during the winter will be made.

and Dealers



TRUCK FACTORY OF STEWART MOTOR CORPORATION OF BUFFALO

There have been rumors that unless the paved road is provided shortly the Prest-O-Lite Co. will move to some other city. Mr. Fisher says, however, that his company has no thought of moving elsewhere.

Irvin Adding to Body Plant—An additional factory building is being erected at Morris and Division streets, Indianapolis, for the R. J. Irvin Mfg. Co., which manufactures motor car bodies and tops. The building will be two stories high, of brick construction, 50 by 407 feet and will cost about \$50,000. The Irvin company also has one building 50 by 275 feet and another building 50 by 126 feet.

Fisk Increasing Capacity—The Fisk Rubber Co. is making extensive additions to its plant in Chicopee Falls, Mass. Contracts have been let for two buildings, one 250 feet long, 90 feet wide, six stories and basement and the other 200 feet long, 60 feet wide, four stories and basement. Necessary rubber machinery, boilers and engine for power plant are to be installed, which will increase the present capacity about 50 per cent. This extra capacity will necessitate the employment of 600 or 700 more workmen. Buildings are to be completed and machinery installed by November 1, 1912.

Tackle Second-Hand Proposition—The Rochester Automobile Dealers' Association of Rochester, N. Y., is considering the advisability of installing a central market for the sale of second-hand cars to prevent price-cutting among dealers in exchange of old cars for new models. Under the plan of a central mart, every dealer of the association is ordered to confer with the officers of the mart before making offers for a second-hand car. Upon joining the mart each dealer must put up bond of \$1,000 and sign agree-

ment articles. For a violation of the agreements the dealer is fined \$100, for a second violation \$500, and should he violate the articles a third time the dealer is promptly expelled from the mart.

Packard Has Bright Outlook—The entire factory allotment of 1913 Packard six model 48 cars which was turned out for the summer business has been contracted for. So brisk has been its sales that the Packard company is now not in a position to make deliveries on any model of its manufacture. Deliveries on the new six-cylinder 38, however, will be commenced early in September.

Will Move to Waukesha—The Chicago Brass and Bronze Co., of Chicago, has accepted the offer of the Business Men's Association of Waukesha, Wis., to relocate its plant. The company has leased the former Wisconsin Railway car shops and is already making improvements and installing equipment. There are four buildings, the main one 113 by 275 feet, and the three others 60 by 90 feet. The new industry is welcomed by the motor industry, notably the Waukesha Motor Co., of Waukesha, which will profit by having a plant to produce its brass and aluminum castings near at hand.

Brisk Business in Nebraska—Nebraska is buying motor cars faster this year than ever before. The state ranked eleventh in number of cars at the beginning of the year, although it is much farther down the list in population. Last year there were 8,608 motor vehicle registrations with the secretary of state. This year, up to July 20, there were 6,158, indicating that the record of last year will be far surpassed. Already there are more registrations than during any previous year except last year. Omaha is buying its share of these cars,

buying nearly 600 last year alone. Omaha's row is filling up rapidly. Five new buildings for use as motor concerns are being erected now. There are thirty-eight car dealers in the city now, exclusive of supply houses, tire branches, garage and repair shops.

To Make Light Deliveries—After more than a year of experimenting the Durant-Dort Co., of Flint, Mich., has decided upon a departure. The company has decided to engage in the manufacture of light motor delivery wagons and has secured the material for the first 100 cars. The class of car will be similar to that of the horse-drawn vehicle now manufactured by the company.

New Marion Sales Manager—Flavius G. W. Sudrow has resigned as sales manager of the Apple Electric Co., of Dayton, Ohio, to become sales manager of the Marion Motor Car Co., of Indianapolis, Ind. Mr. Sudrow was secretary and treasurer of the former National Battery Co., of Buffalo, N. Y., for about 8 years, purchasing agent for the Dayton Motor Car Co. for over a year, and during the past winter manager of the Apple Electric Co.'s Detroit branch.

Columbus, Ind., Successful—The Commercial Club, of Columbus, Ind., has completed selling 150 building lots, which sale was necessary to obtain a \$250,000 factory which will manufacture motor cylinder castings. Of the \$45,000 obtained by the sale of lots, \$25,000 is to be used in paying the debts of the Caldwell Mfg. Co., whose plant is to be taken over by the new company, which will be incorporated with \$75,000 capital. Those interested in the new company are J. I. Handley, of Indianapolis, president of the Marion Motor Car Co. and of the American Motors Co.; S. H. Penfield, Fletcher Goodwell and Benjamin S. Dean, of Jamestown, N. Y.

R. C. H.'s Export Business—During the first 6 months of 1912, 2,208 cars were shipped from Detroit to points outside the United States according to figures recently compiled by the Detroit Board of Commerce. Of these, 502 or over 22 per cent were R. C. H. cars going to all parts of the world. The export business of the R. C. H. still continues to grow. Hardly a week passes but what one or two new selling contracts are closed for foreign territory. Among the latest are France and the section centering around Shanghai, China. For France arrangements have been closed with one of the largest car concerns. Plans are complete for opening a salesroom in Paris that will be among the finest in the city. To supply the recently established R. C. H. business in Shanghai another shipment is now on the way. This territory is handled through Manila dealers and in the short time cars have been there great success has been registered. Another notable export shipment of the past week was six cars bound for Peru. This, however, is not a new contract, being a follow-up order.

Development Briefs

Rotary Valve Engine Invented by Dentist Has Novel Features—Accelerator Foot Throttle for Ford Cars—Puckett Rear Signal Lamp—Grant Anchor Plug

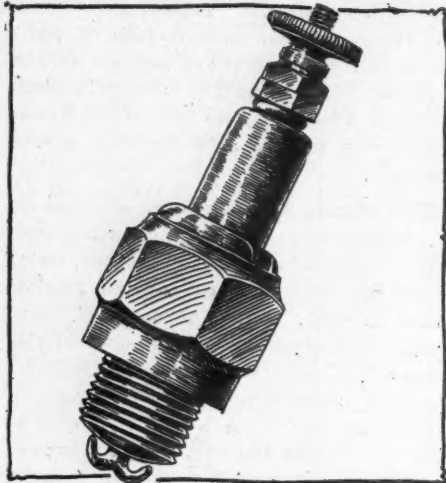


FIG. 1—ANCHOR SPARK PLUG

Dentist's Rotary-Valve Motor

A ROTARY valve, four-cycle gasoline engine which is decidedly original in design, has been invented by Dr. F. S. Thornley of Clarion, Ia. It appears to be the first motor to use a rotary valve on the piston head itself. Referring to the drawing, the valve members consist of a double disk, secured to the piston head at A, and actuated by a valve stem which is rotated by an actuating rod R attached to the connecting rod by a bearing at B and actuated by a worm gear W geared at half-time to a driving gear on the crank. The intake port, I-3, is located on the right side of the cylinder, just below the bottom of the piston stroke, and the exhaust port E-3 is directly opposite it on the left side. Inlet lead I-2 and exhaust lead E-2 are cast in the piston and lead to inlet port 1-1 and exhaust port E-1 in the piston head. These ports are segmental and correspond with the valve opening P in the valve disk.

To allow for the rocking of the connecting rod on the wrist pin, a universal joint is formed by the junction of the valve stem at C and the actuating rod at R. Means of adjusting the valve-timing is provided by a washer K which determines the position of the driving gear in respect to the worm gear W. The worm gear is kept in proper relation to the actuating rod R by means of an adjustment at G. At D is a nut which holds the worm gear in place, and permits of its instant removal. Thorough lubrication is assured by an arrangement whereby a dipper F forces the oil which it picks up from the bottom of the crankcase through the lead H to the duct O in the valve disk. A ball check-valve is located at V to pre-

vent the return of this oil.

A device for the removal of carbon deposits in the piston head is also a feature of the invention, although it has not been incorporated in the design. It consists of a stationary scraper, against which the valve disk revolves.

It is claimed that such an engine would be noiseless except for the exhaust, as no springs are used, and the only gearing is of the worm type, and completely enclosed.

Accelerator for Ford Cars

In order to provide an accelerator which may be attached to model T Fords whereby the throttle can be operated by a toe button in addition to the standard throttle lever on the steering wheel, the Lincoln Machine Shops, Lincoln, Ill., is manufacturing a very simple equipment which may be easily attached without machine work and sells at \$1.50. The attachment is shown in place in Fig. 2. In making the connections the regular rod to the carburetor is removed. The triangular plate is attached by bolting under the cylinder head bolts of the third and fourth cylinders and the short rod attached to the hand throttle rod. It is held by a spring to one of the base bolts and an adjustable rod to the carburetor installed. A pedal inserted in the foot-board is connected by cable.

Puckett Signal Lamp

The combined signal and number displaying lamp illustrated at the right of Fig. 5 is the product of Almor M. Puckett, San Antonio, Tex. It is a tail light which shows a ruby light at the rear and above it displays the illuminated number plate. In construction it consists of a metal box 16 inches in length, 3 inches in

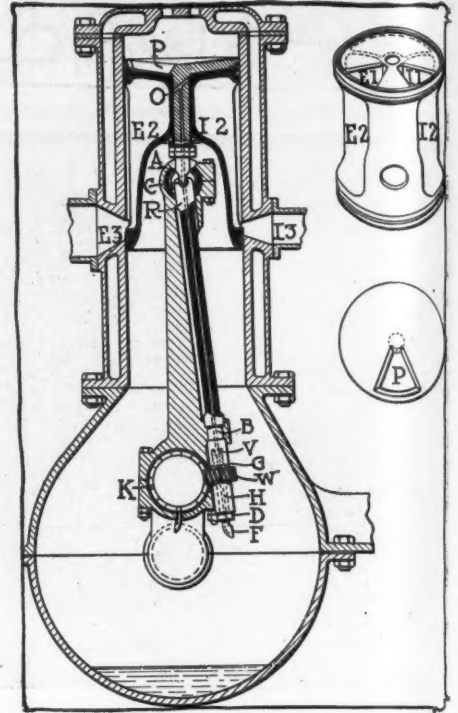


FIG. 3—THORNLEY ROTARY VALVE MOTOR

width and 6½ inches in height. As illustrated at B, the box has a hinged opening on top where a felt-lined frame is inserted which holds the number of regulation size, also a blank ruby red glass for a rear signal. The numbers are white frosted, Grant Anchor Spark Plug

In Fig. 1 is illustrated what is claimed to be a self-cleaning, oil-proof spark plug. This is the Grant anchor plug, marketed by the General Illuminating Co., New York city. Its construction consists of a steel body provided with a plug thread into which is placed the insulating body by means of lock nuts. A pure nickel electrode which passes through the insulating body is bent back at its lower end in the shape of an anchor against a mass pole which acts as an oil protector. It is claimed that the length of the insulating body prevents the passage of sparks between the nut through which the current passes and

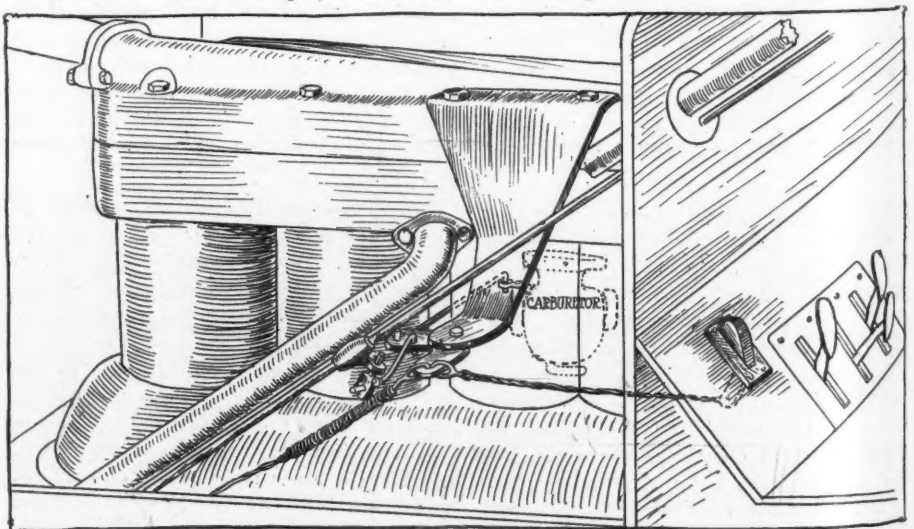


FIG. 2—LINCOLN ACCELERATOR FOR FORD CARS

Novelties for Motoring

Silver King Extension Wrenches—Combination Radial and Thrust Ball Bearing—New Headlights Burn Alcohol—Another Substitute for Pneumatics

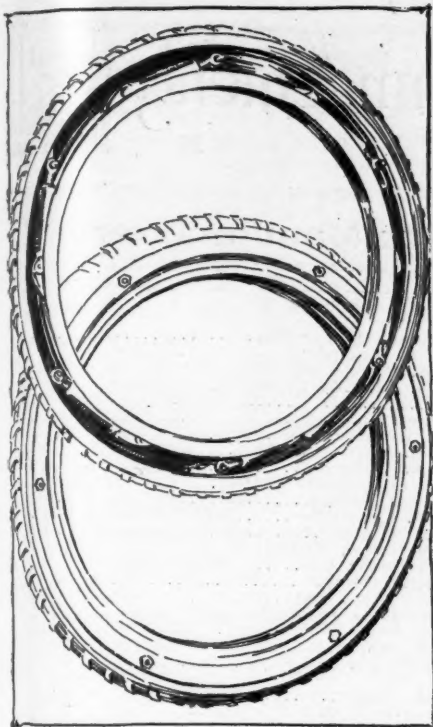


FIG. 4—FERROMATIC TIRE

the steel body. The spark is formed between the nickel electrode and the oil protector, and on account of the air cushion formed behind it, it is said to be impossible for any oil to get there. Owing to the construction of the plug, no dismounting is needed. Should it by any chance be necessary to clean the plug, a light brush over the oil protector is all that is required.

Silver King Wrenches

The C. M. B. Wrench Co., Syracuse, N. Y., has recently produced some refinements in its line of extension wrenches. In Fig. 5, are illustrated three of the ways in which the new Silver King wrench set may be employed. The set consists of an adjustable ratchet handle head and T with adjustable ball joint; also a universal joint, two extensions, spark plug wrench, screwdriver, 17 sockets to fit all standard hexagon nuts from $\frac{1}{4}$ to $\frac{5}{8}$ -inch and cap screws from $\frac{1}{4}$ to $\frac{1}{8}$ -inch, and square nuts from $\frac{1}{8}$ to $\frac{3}{8}$ -inch. At A is

shown the ratchet drill attachment placed in the wrench head ready for use. The handle will swing at any position required to dodge obstacles. B shows the long extension with screwdriver and adjustable ratchet wrench attached. The ratchet is arranged to slide up and down on the extension bar and the handle will swing to any angle giving a double adjustment. C illustrates the adjustable handle on the ratchet wrench head used on the universal joint, with the extension on the universal joint, making a double adjustment which can be operated in places where no straight-handled wrench can be used.

Globe Duplex Combination Bearing.

The Globe Ball Bearing Co., of New York, has just brought out a combination radial and thrust ball bearing, of original design, a sketch of which is reproduced in Fig. 6. It consists of a double race, which takes direct loads and direct thrust. The balls are of two diameters, and the bearing is of the non-adjustable type.

Alcohol Headlights

A self-contained headlight is marketed by the Butylite Automobile Headlights Co., New York. This uses neither tank, generator, nor dynamo. No wires or tubes are necessary, and the lamp may be demounted at will, for use as a trouble lamp, or for exploring. Alcohol is the fuel, and it is burned in an incandescent mantle. The lamp differs in no way in appearance from the ordinary gas lamp, and uses a parabolic reflector in place of the usual mirror lens. One quart of alcohol, it is claimed, will give approximately 70 candlepower for 20 hours, at one filling. An ordinary tire pump is used to pump up the air pressure, a Schrader valve being used. An air-gauge is fitted to insure the proper pres-

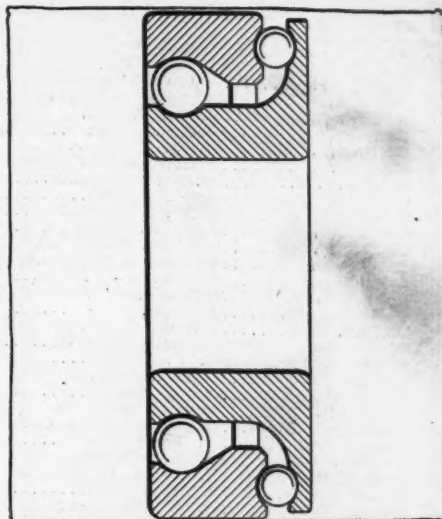


FIG. 6—GLOBE COMBINATION BEARING

sure for satisfactory operation. The mantle, due to its small size and great thickness, is said to be immune to road shocks, being of a special patented make. It is asserted that this lamp may be burned for as little as 1 cent an hour.

The Ferromatic Tire

Interchangeable with pneumatic tires, the Ferromatic tire, which is the product of the Ferromatic Tire and Mfg. Co., Kansas City, Mo., adds one more to the number of substitutes for the much-maligned pneumatic. In appearance it differs only slightly from the pneumatic of equal size, and uses a tread quite similar. It is composed of two normally concentric rings, connected by diagonally placed helical springs, which are made of vanadium steel, and form the resilient element of the tire. The outer ring, which is of pressed steel, is provided with a rubber tread, and the inner, also of pressed steel, being so formed as to fit the standard clincher or quick-detachable rims. The springs number from 5 to 8 according to the size of tire. It is claimed that this spring tire weighs only slightly more than the ordinary pneumatic of corresponding size. It is illustrated in Fig. 4.

Non-Corrosive Metal Polish

To supply the demand for a polish for nickel and German silver that would not corrode nor unduly wear such metals, the Armiger Chemical Co., Chicago, has just brought out Rex Velvet nickel polish. It is claimed to polish nickel, nickel plate, and German silver surfaces as readily as other polishes, but to wear the metal considerably less, and to spread a film of protecting substance over it to prevent corrosion.

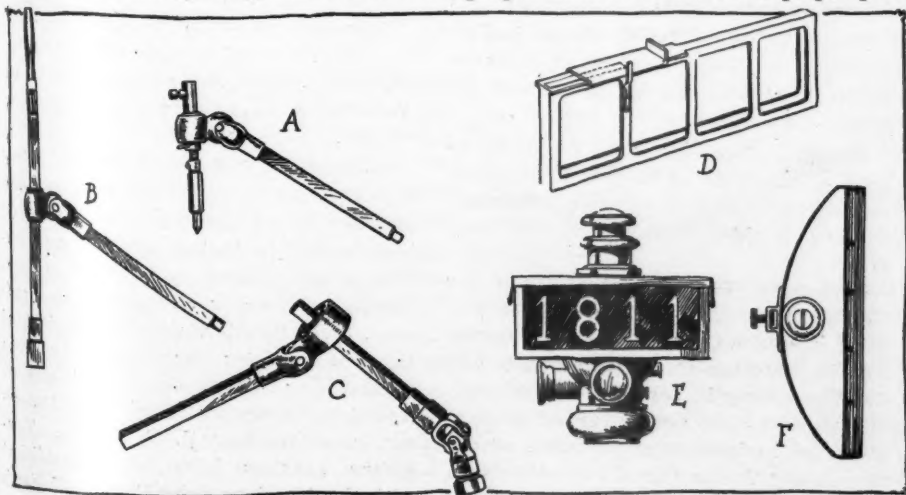


FIG. 5—SILVER KING WRENCHES AND PUCKETT SIGNAL LAMP



Brief Business Announcements



Recent Agencies Appointed by Car and Truck Manufacturers

PLEASURE CARS					
Town—	Agent	Make	Town	Agent	Make
Albany, N. Y.	Albany Garage Co.	Peerless and White	Newcomerstown, O.	Norman Garage Co.	R. C. H.
Andalusia, Ala.	Fletcher & O'Neal	R. C. H.	New Haven, Conn.	Cowles Toleman	R. C. H.
Austin, Minn.	A. W. Wolten	R. C. H.	New London, Conn.	E. A. Meyers and C. M. Lippincott	R. C. H.
Babylon, N. Y.	George Haab	R. C. H.	Newark, N. Y.	L. H. Farnsworth and H. J. Welcher	R. C. H.
Baltimore, Md.	H. S. Block	Stoddard-Dayton	Norristown, Pa.	Daniel H. White	R. C. H.
Baltimore, Md.	Rittenhouse-Winterson Auto Co.	Cartercar	Norwich, Conn.	The Uncas Garage	R. C. H.
Benton, Pa.	John F. Wright	R. C. H.	Pensacola, Fla.	W. L. Wittich & Co.	R. C. H.
Chicago, Ill.	G. A. Jacobs	R. C. H.	Peru, Ill.	A. A. Bakewell	R. C. H.
Cleveland, O.	Gus A. Baumetz	R. C. H.	Pine Bluff, Ark.	Pine Bluff Motor Car Co.	Mercer
Cleveland, O.	John B. Hargis	R. C. H.	Portland, Me.	Fred D. Morse	R. C. H.
Cleveland, O.	Oakland Motor Car Co.	Oakland	Poughkeepsie, N. Y.	E. B. Delamater	R. C. H.
Columbus, O.	Sitgreaves Auto Livery	Mercer	Oswego, N. Y.	Rowe & Sikes	R. C. H.
Columbus, O.	Sitgreaves & Boyd	R. C. H.	Ottawa, Kan.	John Nelson & Son	R. C. H.
Columbia, S. C.	Independent Auto Sales Co.	R. C. H.	Quincy, Ill.	Reld Motor Co.	R. C. H.
Danville, Ill.	John P. Agan	R. C. H.	Quincy, Mass.	Central Garage	R. C. H.
Denver, Colo.	William Thorney Auto Co.	R. C. H.	Redfield, S. D.	Blaine Auto Co.	R. C. H.
Dixon, Ia.	Hensen Auto Co.	R. C. H.	Rochester, N. Y.	Empire State General Vehicle Co.	Locomobile
Dodge Center, Minn.	G. F. Wolter	R. C. H.	Rochester, N. Y.	Gillis-Baird Motor Co.	Hudson
Dothan, Ala.	Dothan Carriage Co.	R. C. H.	Roswell, Ga.	H. A. Walton and C. W. Ellington	R. C. H.
Elkhart, Ind.	A. C. Adams	R. C. H.	Salem, O.	Salem Auto and Repair Co.	R. C. H.
Faribault, Minn.	Mutual Auto Co.	R. C. H.	San Luis Obispo, Cal.	R. A. Minor	R. C. H.
Gagetown, Mich.	Gagetown Auto Co.	R. C. H.	Saranac Lake, N. Y.	Duquette & Moody	R. C. H.
Geneva, N. Y.	D. M. Dorman	R. C. H.	Scottsdale, Pa.	Claude Murphy	R. C. H.
Greeley, Colo.	G. S. Hammett	R. C. H.	South Bend, Ind.	Otis Motor Car Co.	R. C. H.
Greensboro, N. C.	P. Watt Richardson	R. C. H.	Topeka, Kan.	J. C. Vanier	R. C. H.
Honey Grove, Tex.	J. I. Warren	R. C. H.	Traverse City, Mich.	The Hines Motor Co.	R. C. H.
Huron, S. D.	E. I. Bowe	R. C. H.	Tuchahos, N. J.	A. B. Adams	R. C. H.
Indianapolis, Ind.	Conduitt Automobile Co.	Chalmers	Uhrichsville, O.	J. W. Lytle	R. C. H.
Knoxville, Tenn.	Vest & Anderson Co.	R. C. H.	Vancouver, B. C.	Terminal City Motor Co.	Mercer
Lakefield, Minn.	Finch & Stinar	R. C. H.	Wapakoneta, O.	C. J. McFarland	Mercer
Little Valley, N. Y.	H. W. Burrell and D. J. Case	R. C. H.	Ware, Mass.	Hoyt Brothers	R. C. H.
Louisville, Ky.	Allen E. Reid	Overland	Waycross, Ga.	H. L. Marvill	R. C. H.
Luthersville, Ga.	A. O. Williams	R. C. H.	Windom, Ont.	F. S. Evans	King
Machias, Me.	Crane Brothers	R. C. H.	Windom, Minn.	Walter P. Cowan	R. C. H.
Madison, Wis.	Ritter Automobile Co.	Hudson	Winona, Minn.	E. J. Tisdale	R. C. H.
Milton, N. D.	Rolph Prom	R. C. H.	Wilmont, Minn.	Olund & Nyström	R. C. H.
Minneapolis, Minn.	Mercer Sales Co.	Mercer	Witt, Va.	G. H. Guerrant	R. C. H.
Monticello, Ind.	Clifford Auto Co.	R. C. H.	Yates Center, Kan.	Patterson & Patterson	R. C. H.
Montreal, Can.	Standard Electric Garage	Hupp and Flat	Youngstown, O.	R. L. Culbertson & Co.	Mercer
Montreal, Can.	J. O. Collotte	Little			
Moody, Tex.	Clay & Gilmore	R. C. H.			
Mount Pleasant, Tex.	Ralph H. Love	R. C. H.			
TRUCKS					
Cleveland, O.	Windermere Garage	Sanford	Holyoke, Mass.	Magna Auto Co.	Adams
Cleveland, O.	A. W. Hall Automobile Co.	Hatfield	Peekskill, N. Y.	W. H. Ask	Alco
Baltimore, Md.	Rittenhouse-Winterson Auto Co.	Seitz	Montreal, Can.	Standard Electric Garage	G. M. C.
Binghamton, N. Y.	M. T. Rogers	Alco			

CONWAY, Mass.—A. J. Patterson is having a large garage built on Main street that will be ready in a few weeks.

Washington, D. C.—The G. R. Cowie Co., agent for the Cole, at 1315 H street, N. W., has been appointed agent for the R. C. H. in this section.

Chicago—A new service station and salesrooms at 1700 Wabash avenue has been opened for Chicago users of Durable Dayton motor trucks.

York, Pa.—The J. W. Reichley Auto Co., 237 East Philadelphia street, has completed the remodeling of its garage. A large two-story brick structure was added to the former building. The garage is the largest in the city, having 14,000 feet of floor space. The building will easily accommodate 125 cars.

Milwaukee, Wis.—George W. Browne, state agent for the Overland, Marmon and Stutz, 458-462 Milwaukee street, has organized two corporations to succeed the individual business. The Overland Wisconsin Co. is capitalized at \$50,000 and its incorporators are George W. Browne, T. C. McMillan and Mark F. Browne. The style of the other corporation is George W. Browne, Automobiles, and the author-

ized capital is \$5,000, the incorporators being the same as those of the Overland Wisconsin Co.

Louisville, Ky.—The Brandeis Machinery and Supply Co. has secured the agency for Imperial tires in this vicinity.

Pittsburgh, Pa.—The Lawrence Automobile Co., of New Castle, Pa., has been granted a state charter. The concern is capitalized at \$40,000.

Fox Lake, Wis.—Joseph Hartle has established a garage and repair shop on Mechanic street. He has not closed his agency line as yet.

Ansonia, Conn.—Kolman Luria is to erect a garage 60 by 40 feet on his property at the southwest corner of Main and Colburn streets, Ansonia, in the near future.

Buffalo, N. Y.—The Mutual Motor Car Co., which concern was incorporated last week at Buffalo, has secured the agency for the Marathon in New York state and the Warren car in northern Pennsylvania and western New York. Instead of handling the business from the office of the Poppenberg Motor Car Co. at 674 Main street, as was the original intention, the directors have secured for the salesroom

and office the premises at 923 Main street, while their garage will be located at 479-483 Pearl street.

Barton, Vt.—A new garage is nearing completion at Barton for True & Blanchard. It is of brick, concrete and steel.

Racine, Wis.—The Racine Rubber Co., of Racine, Wis., has changed its corporate style to Belle City Rubber Co. J. W. Bate is president.

Cleveland, O.—The Park Motor Car Co., distributor of the Metz, has been reorganized under the name of the Park Motor Mfg. Co., with a capitalization of \$15,000.

Indianapolis, Ind.—With an authorized capitalization of \$2,000 the A & M Sales and Service Co. has been organized and incorporated in Indianapolis and will distribute the Marion and American cars. Officers of the new company are: President, J. I. Handley, who is president of the Marion Motor Car Co. and American Motors Co.; vice-president and general manager, Thomas L. Marshall, and secretary and treasurer, J. R. Wilbur. Temporary quarters have been established with the American Sales Co., at 517 North Capitol avenue. The new company's ter-

territory will include Indiana, western Ohio, southeastern Illinois and western Kentucky.

Sigourney, Ia.—The Kendall-Friday Co. is building a large garage and will handle motor cars, gas engines, farm electric plants and supplies in a wholesale way.

Boston, Mass.—Louis J. Sackett who was recently with the Cadillac agency in Boston, has been appointed manager of the Boston branch of the Oakland.

Manitowoc, Wis.—L. J. Anderson is building a \$15,000 garage and shop on Commercial street, and will distribute the Studebaker line in Manitowoc and vicinity.

Seattle, Wash.—C. J. Bonness, formerly with Chanselor & Lyon, more recently with the United States Tire Co., has taken the agency for the Miller tires in Seattle.

Omaha, Neb.—Doty & Hathaway has taken the agency for the Little Four, and has opened up a garage at 1902 Farnam street. L. E. Doty formerly was manager of the United Motor Omaha Co.

Milwaukee, Wis.—The Sanger Automobile Co., of Milwaukee, has formally opened its new garage at 564-574 Farwell avenue. The building has dimensions of 100 by 150 feet and can accommodate from 150 to 200 cars.

Sanford, Me.—Hannaford Barr and George Stilphen, of Sanford, Me., have formed the Maine Auto Co. They have started work on the ground floor of the old fire station on Mechanic street, fitting it up as a garage and general supply station.

Buffalo, N. Y.—The Diamond Rubber Co. has opened a mechanical goods branch at 721 Main street. A. A. Lyon has been appointed manager of the branch which will carry rubber mechanical goods, including belting, hose and packing, and Diamond tires.

Washington, D. C.—T. S. Johnston has resigned as manager of the Buick Motor Co.'s branch here to accept a position as manager of the Republic Motor Co.'s branch in Philadelphia. He will work the southern territory from Philadelphia south to Florida.

South Bend, Ind.—Hanson Robinson, for the past 5 years in charge of the sales of Studebaker electric trucks in South Bend, has gone to Detroit, where he takes a position as manager of the sales department of gasoline and electric trucks.

Cleveland, O.—Merging the United States Motor Co.'s interests places Dr. F. E. McClure in charge of the marketing of all of the company's products in the Cleveland district. He retains the management of the States Cleveland Motor Co., which handles the Stoddard-Dayton, Brush and Courier cars, and in addition will have charge of the marketing of Columbia and Maxwell, which the United Motor Cleveland Co. markets. C. H. Tyler, former manager of

the United Motor Cleveland Co., has left to become special representative of the Marion Motor Car Co. in the central west.

Kaukauna, Wis.—The Kaukauna Auto Co. has leased the Griswold building and will open a garage and salesrooms. The company has the agency for the Marathon.

Kalamazoo, Mich.—William J. Slater, formerly advertising manager of the Firestone Tire and Rubber Co., has been made assistant sales manager of the Michigan Buggy Co.

Moline, Ill.—The Moline Auto Co. is to build an extension to its East Moline plant, a building 60 by 160 feet to be constructed for use as repair shop and repair stock room.

Blackstone, Mass.—The old McDonald store on River street, Blackstone, Mass., has been purchased by Mrs. George Ashton, who will build a public garage on the property.

Racine, Wis.—The Jensen Electrical Co., of Racine, Wis., has moved from 1524 Washington street to new quarters at 1504-1508 Washington street. The company deals in illumination and ignition supplies and does repair work.

Detroit, Mich.—Procter Brevard, who has been associated with the Hudson Motor Car Co. in the capacity of experimental engineer for the past year and a half, has resigned his position and is now with the Zenith Carburetor Co.

New London, Wis.—The H. A. Steiner Co., of Chilton, manufacturing gasoline engines and motors, is negotiating with local capitalists for re-location of its works. A bonus of \$13,000, to be subscribed for its stock, is demanded.

Cleveland, O.—In furtherance of the new sales policy of the Oakland company, a factory branch has been opened here, where this car will be handled exclusively. The present quarters on Euclid avenue at East Twentieth street are temporary, until a suitable location can be secured for a permanent location. Fred C. Wood is in charge of the new established factory branch.

Anderson, Ind.—Hunter & Co., of Steubenville O., has taken the agency for the Nyberg cars in the county. L. F. Carr, of Jacksonville, Fla., will represent the Nyberg in Duval, St. John, Brevard, St. Lucie, Palm Beach and Dade counties. Mr. Carr now has under construction a large garage in Jacksonville. Jack Williams is the new agent at Buxton, Ia., for the Nyberg.

Columbus, O.—A partnership consisting of Fred Boyd, formerly connected with the Curtin-Williams Automobile Co., and G. L. Sitgreaves has been formed under the name of Boyd & Sitgreaves to operate a garage and sales agency at 42 West Capitol street. The partnership will handle the Simplex, Mercer and Apperson lines in central Ohio during the season of 1913. The concern occupies a new garage which

is 80 by 140 feet without a post in it. Mr. Sitgreaves also is operating a taxicab business in Columbus.

Detroit, Mich.—F. C. Gumper, formerly connected with the Russel Motor Axle Co., North Detroit, since its inception, has joined the sales forces of the Krit Motor Car Co.

Minneapolis, Minn.—The Minneapolis Auto Trading Co. will handle two new truck lines—the Commerce and the Universal. D. N. Hume and R. G. Ragen make the firm. Mr. Ragen was formerly with the Peerless, Packard, Studebaker and Elmore firms.

Boston, Mass.—T. N. Hayes is erecting a brick garage at 15-17 Berkeley street.

Lansing, Mich.—L. C. Smith, formerly assistant advertising director of the General Motors Co., has been placed in charge of the advertising of the Olds Motor Works, Lansing, Mich.

Detroit, Mich.—The Oakland Motor Car Co., Pontiac, Mich., has opened a sales branch in Detroit, with William R. Tracy, for the past two seasons sales manager of the Oakland Sales Co., Ltd., as its manager. J. F. Montgomery has resigned from the Bemb-Robinson company to take a sales position with this new Oakland branch.

St. Paul, Minn.—Smith & Heberle, 195 West Sixth street, St. Paul, has taken the Minneapolis agency for the Hudson car and will open a garage at 907 Hennepin avenue, maintaining its St. Paul agency as before. The Minneapolis Hudson Auto Sales Co. will continue at the present place, 1400 Hennepin avenue, in the used car business.

Davenport, Ia.—The Union Motor Co., agent for the Oldsmobile and the Buick lines, has moved from its former location, 114 Brady street, to new headquarters at 527-31 West Third street. The new garage, which is of brick construction with stucco front, is 64 by 81 feet in dimensions. Louis Otto is president and general manager of the company.

Sheboygan, Wis.—The Rummele garage, Center avenue, is being entirely remodeled and space will be allotted to the charging and display of electric cars, the company having taken the agency for the Detroit electric. A new two-story glass front is being built in place of the present wooden front and an additional entrance driveway is provided. George Ferry is manager of the garage.

Montreal, Que.—Following are a few details about the Mount Royal garage. The capitalization of the company building it is \$500,000. The building will be 70 by 200 feet, six stories and basement and steam-heated, with modern equipment. It will have a capacity of 300 to 400 cars. Two elevators, 3 to 5-ton capacity, will be constantly running. Commodious chauffeurs' quarters and comfortably furnished waiting rooms and toilet rooms will be part of the equipment. A fully equipped paint, re-

pair and machine shop will be provided as well as modern methods of storing and delivering gasoline, oil, compressed air, etc.

Detroit, Mich.—R. J. Mantell, Jr., has just opened a branch of Louis Dusenberry & Co., at 804 Woodward avenue. This concern makes upholstering and laprobe fabrics.

Pittsburgh, Pa.—A factory branch of the Motz Tire and Rubber Co., of Akron, Ohio, has just been opened at 300 North Craig street. S. H. Fronsdorf is in charge of the new factory branch.

Buffalo, N. Y.—The Crosby Co., manufacturer of motor car frames, is constructing an addition to its plant. The entire structure, when the addition is completed, will be four stories in height and of steel construction.

Moline, Ill.—E. H. Wiles has accepted a position with the Velie Motor Vehicle Co., being appointed superintendent of experimental work, a department which is meeting with special attention from the Velie company.

Moline, Ill.—The Moline Automobile Co. has established a branch house at Los Angeles with O. J. Root as manager and in charge of all sales on the Pacific coast, the general plans of the company being to devote more attention than formerly to the trade west of the Rockies. The Ben-Rick Auto Co., of Los Angeles, will handle the retail trade of that city

and vicinity. The branch will be incorporated as the Moline Automobile Co., of Los Angeles.

Boston, Mass.—The Fred Page Co., of Lynn, Mass., maker of the P & P tire filler, has opened a branch at 108-110 Massachusetts avenue, corner of Newbury street, for the product.

Milwaukee, Wis.—Rasmus Jensen, operating one of the largest motor car repair and reconstruction shops in Milwaukee, at 61-73 Sixth street, has disposed of the business to H. W. Wilson.

Easthampton, Mass.—The mill building at the junction of Union street and Payson avenue, owned by Dibble & Warner, has been purchased by Charles Harris, who is to use it in which to manufacture motor car wheels.

Buffalo, N. Y.—E. T. Strong, for the past year manager of the local branch of the Buick Motor Car Co., 1094 Main street, has been transferred to the Indianapolis branch of that concern and is succeeded at the Buffalo office by J. S. Collins, of Saginaw, Mich.

Beloit, Wis.—The Menhall garage, operated by James W. Menhall for several years, is now known as the Beedle Automobile Co. as the result of the sale of the business and agencies to Dr. C. E. Smith, Dr. P. A. Fox and George F. Beedle. The company will represent the Columbia, Hud-

son, Reo, Sampson and other United States Motor Co. lines, for which Mr. Menhall will be traveling representative in Wisconsin.

Montreal, Que.—The Independent Tire Co. of Toronto, Limited, has been authorized to do business in the province of Quebec. Its chief place of business in the province is at Montreal.

Ripon, Wis.—The Modern garage has been established here by Harry J. Schwartz and J. F. Brodersen, formerly owners of the Third Street Garage Co., 685-689 Third street, Milwaukee. The new garage will represent several well known makes of cars and deal in accessories and supplies.

Washington, D. C.—Involuntary petition in bankruptcy has been filed against W. Elkins Reed, trading as the Motor Supply Shop, agent for the Hupmobile. L. C. Loving and T. C. Bradley have been appointed receivers under a bond of \$5,000. Reed's total liabilities are about \$6,500 and his assets \$1,500.

Cedarburg, Wis.—The A. J. Meyer Motor Car Co. is the latest addition to the list at Cedarburg. The company is incorporated for \$25,000 and the principal stockholders are John Armbruster, Jacob Dietrich and John F. Bruss. A garage has been established and negotiations for agencies are now going on.

Buffalo, N. Y.—William Guillett Mfg. Co.; to deal in motor car frames and stamped metals; incorporators, William Guillett, Anna G. Guillett, Edward B. Reynolds.

Buffalo, N. Y.—Gardner Hotte Sales Co.; capital stock \$10,000; to deal in motor cars, tires and tubes; incorporators, J. H. Gardner, B. H. Gardner, G. Hotte, W. E. Hotte.

Buffalo, N. Y.—Studebaker Sales Co.; capital stock \$25,000; to deal in motor cars; incorporators, A. W. Maille, B. H. Phillips, E. P. Schlenker.

Buffalo, N. Y.—Chinnock Garage, Inc.; capital stock \$3,000; incorporators, Beatrice H. Mattoon, Adelaide Kenny, Edgar L. Chinnock.

Boston, Mass.—Elliott Motor Engine Co.; capital stock \$300,000; to manufacture and deal in engines; incorporators, Gilbert R. Elliott, Frank P. Harris, W. C. Cogswell.

Cambridge, Mass.—Blake Automobile Co.; capital stock \$100,000; incorporators, E. C. Blake, L. E. Gibson, Datista Vitalini.

Columbus, O.—Davies-Bach Mfg. Co.; capital stock \$300,000; to manufacture tires, vehicles and motor car accessories; incorporators, George R. Nash, C. H. Davies, O. Nelson, G. Lampus, P. D. Metzger.

Chicago—Fargo Motor Car Co., capital stock \$50,000; to manufacture motor cars and accessories; incorporators, E. G. Kral, B. F. Kral, J. J. Kral.

Chicago—Automobile Supply Co. of Illinois; capital stock \$10,000; to manufacture motor car supplies; incorporators, Albert Norwald, Samuel Rubinsky, Harry Simmons.

Chicago—Modoc Motor Car Co.; capital stock \$2,500; incorporators, Otto S. Heberling, William A. Curtis, George R. Raugana.

Chicago—Tesla Auto Light Co.; capital stock \$6,000; to manufacture motor car supplies; incorporators, Charles B. Stafford, Harry C. Lovinson, Albert Jacobs.

Cleveland, O.—No-Shammy Funnell Co.; capital stock \$1,000; to deal in motor car accessories; incorporators, F. T. Kovar, George Dantel, L. Dantel, David P. Bowden, Robert H. McKay.

Hartford, Conn.—Capitol City Electric Garage Co.; capital stock \$50,000; incorporators, Frank A. Champlin, James Leslie Burton, Clarence W. Seymour.

Louisville, Ky.—Central Automobile Co.; capital stock \$15,000; incorporators, Walter P. Dickerson, Gus Koehler, Clyde E. S. Enrick.

Nashville, Tenn.—City Taxicab Co.; capital stock \$3,500; incorporators, E. D. Dakin, T. O. Perkins, J. D. Andrews.

Recent Incorporations

Newport, Ky.—Central Automobile Co.; capital stock \$15,000; incorporators, Walter P. Dickerson, Gus Koehler, Clyde S. Enrick.

Newark, N. J.—Sullivan Automobile Co.; capital stock \$25,000; incorporators, James Sullivan, Charles Bagole, W. N. Epanzel.

New Haven, Conn.—R. L. Bishop Motors Co.; capital stock \$25,000; incorporators, Raymond Leslie Bishop, William Frank Sargent, Frank Pierce Sargent.

New York—Regal Auto Sales Co.; capital stock \$5,000; incorporators, Max Hart, William N. Botto, Norman E. Mannwaring.

New York—Duffy Lubricants Manufacturing Co.; capital stock \$25,000; to deal in oils, etc.; incorporators, James F. Duffy, Harry W. Conklin, Harris K. Halikman.

New York—Curran Patent Co.; capital stock \$10,000; devices for motor cars, machinery, etc.; incorporators, Harry J. Curran, Clara D. Curran, Charles H. Wilson.

New York—Holt-Chandler Co.; capital stock \$25,000; incorporators, Henry E. Holt, Frederick E. Tucker, Warren R. Chandler.

New York—Silvex Co.; capital stock \$100,000; to manufacture cleaners for metals, motor car polish and motor car accessories; incorporators, Edward H. Schwab, James H. Ward, Charles M. Schwab.

New York—Harmon Yount Co.; capital stock \$100,000; to deal in motor cars; incorporators, D. H. Hanckel, F. B. Hunt, H. M. Kelly.

New York—Cukor Safety Crank Co.; capital stock \$40,000; incorporators, D. Cukor, H. I. Rosenblum, I. Newstaedter.

New York—Dillman Helin Motor Co. of Richmond Hill; capital stock \$20,000; to manufacture engines, motors and machinery; incorporators, W. C. Dillman, R. C. Dillman, E. D. Dillman.

New York—Maxi Co.; capital stock \$200,000; to manufacture carburetors; incorporators, Edward A. McCoy, Ernest Hopkinson, F. V. W. Richardson, John C. McCoy.

New York—Kelly-Field Co.; capital stock \$10,000; to manufacture motor cars and tires; incorporators, Charles F. U. Kelly, Harry E. Field, Jacques L. Boisse.

New York—International Automobile League Tire and Rubber Co.; capital stock \$1,000,000; to manufacture, buy, sell and deal in motor cars.

Middletown, N. Y.—Industrial Motor Car Co.; capital stock \$350,000; incorporators, William A. Courtland, Cuthbert W. Jewell, M. G. Crawford, Harris H. Rayl, Wheelock Mansions, Montecello A. Bonneford.

Philadelphia, Pa.—Wallace Automobile Co.; capital stock \$300,000; incorporators, Clarence Jacobs, S. E. Robinson.

Portland, Me.—Anti-Friction Bearing Co.; capital stock \$500,000; to manufacture bearings for motor cars, machinery, etc.; incorporators, Charles H. Chapman, Elmer Perry, Stephen C. Perry.

St. Louis, Mo.—Pugh Auto Chair Co.; capital stock \$5,000; to deal in motor car chairs; incorporators, John Schulz, A. A. Vancleave, C. C. Knight.

St. Joseph, Mo.—Northwest Missouri Auto Co.; capital stock \$5,000; general motor car supply business; incorporators, Ben F. Ellington, Claude C. Tanner, Lena M. Ellington.

Seattle, Wash.—Alvord Automatic Machines Co.; capital stock \$30,000.

Seymour, Conn.—Seymour Motor Express Co.; capital stock \$10,000; incorporators, D. H. Riggs, C. Boies, E. H. Rolston.

South Bend, Ind.—South Bend Auto Body Co.; capital stock \$20,000; incorporators, Samuel W. Nicholson, Stanley W. Nicholson, J. C. Paxson, V. E. Paxson.

Toledo, O.—W. H. McIntyre Co.; capital stock \$10,000; to deal in motor cars and trucks; incorporators, W. H. McIntyre, Edward L. Laskey, Clara McIntyre, William G. Vollamayer, Frank C. Kelley.

Trenton, N. J.—M. M. Tire Co.; capital stock \$20,000; incorporator, William Maglins.

Ulrichville, O.—Union Delivery Co.; capital stock \$5,000; to do a general motor delivery business; incorporators, J. E. Smith, John F. Cappel, Ernest C. Fox, C. W. Ross, P. W. McCue, W. B. Devine.

Winsted, Conn.—Brown Machine Co.; capital stock \$5,000; to do motor car repairing; incorporators, Edward E. Brown, Edward E. Brown, Jr., William A. Brown.

Youngstown, O.—Folberth Carburetor Co.; capital stock \$70,000; incorporators, E. A. Hogg, H. A. Emery, E. A. Tobey, Joseph F. Williams, Thomas L. Morgan.